

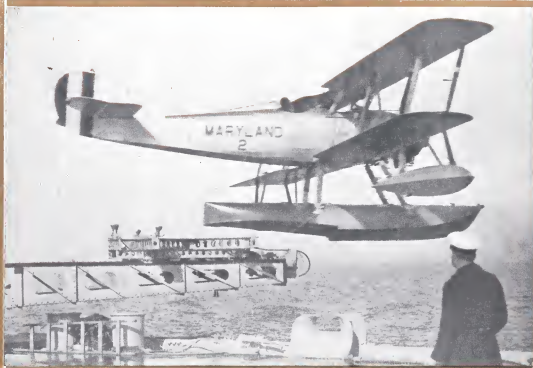
# AVIATION

*The Oldest American Aeronautical Magazine*

MAY 2, 1927

Issued Weekly

PRICE 15 CENTS



A Naval Vought UO leaving the U.S.S. Maryland by catapult

VOLUME  
XXII

## SPECIAL FEATURES

NUMBER  
18

AVIATION IN SOUTH AMERICA  
VOUGHT CORSAIR NAVAL PLANE  
PRATT & WHITNEY HORNET ENGINE TESTED

GARDNER PUBLISHING CO., INC.  
HIGHLAND, N. Y.  
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MODEL  
2A-1500  
GEARED  
Right side and  
front view



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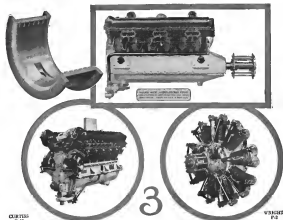
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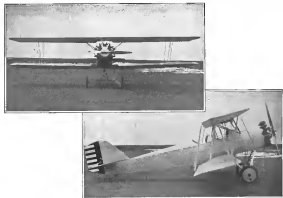
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Vol. XXII MAY 2, 1927 No. 18

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Advertisements sent: Five dollars per year. Single copies, ten cents. Foreign orders, check in advance. All orders must be paid for in advance.

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## With the Editor

To be literally, with the editor this week is to be part and parcel of the All-American Aircraft Display, Washington, D. C., May 2 to 6. Weeks before the actual opening of the Display, this was where the editor really was in thought, and throughout the Show he will be there either in person or in spirit. For he feels that the importance of this project cannot be over-emphasized. Running parallel, as it does, with the Pan American Conference, it should bring to the attention of our South and Central American neighbors the wisdom of the establishment of a closer relationship between the two continents, the gradual expression of commercial aviation facilities, and above all, show to American interests the strides made during the last few years in the manufacture of aircraft and their application to the needs of upland and seaborne life, as members of such frontier provinces and in the pursuit of pleasure and in resources.

A perusal of the program outlined for the Sunday Display evokes the impression that even the most optimistic enthusiast will view modern aircraft expansion with surprise.









would almost pay even with the country so underdeveloped as it is at present. It is only an eight to nine hour flight, whereas it now takes eight days by train. Next will come such

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Chile, with road less 2,855 miles in length, is the entire country in no part more than 90 miles in width, presents an unusual presentation from every standpoint, geographical or otherwise. There are 25,000 miles of public highway and the Longitudinal Railway of Chile traverses the republic from north to south over a track distance of 2,855 miles, and it would appear that these provide for the major transportation needs of the country. There is undoubtedly, however, a considerable amount of seasonal traffic and much of this that is not seasonal traffic will be speeded up with airplanes and trucks. But the extent of this type of traffic movement has been assumed up definitely, however, although the Chilean movement has by no means diminished recently.

Military aviation is under the Directorate General of Military Aeronautics, while there is also a Directorate of Naval Aeronautics. It has been reported that there are some three-engine Junkers machines in the military service.

## Columbina

Columbus was the first of the Latin American republics to develop commercial aviation and the operations of the

roads, in which commerce is already being made, need no attention. The country is tremendously rich in natural resources, notably coffee, minerals and rubber, and industry is being rapidly developed. The country is, however, still hampered by lack of transportation facilities. Colombia cannot be said to possess a railroad system. The few railroads are devoted lines connecting important towns with the sea or the Magdalena River, which is the main artery of the nation, even though this river is closed at certain times at certain times of the year when sandbars across the closed bars have to be made by means of rafts.

It is not surprising, therefore, that the Brazilian Colonias Alamos de Transportes Aereos, which operate a fleet of aircraft used by the Brazilian from Pernambuco to Caracas, offer a wide range of services. The 747-200, with a capacity of 275 seats, would have the most modern and comfortable seats in the world. The 747-200 is the only aircraft in the world that can fly from Recife to Caracas non-stop, with a flight time of 10 hours and 30 minutes. The 747-200 is the only aircraft in the world that can fly from Recife to Caracas non-stop, with a flight time of 10 hours and 30 minutes. The 747-200 is the only aircraft in the world that can fly from Recife to Caracas non-stop, with a flight time of 10 hours and 30 minutes.

transport is not prioritized in a coastal state such as Ecuador, but it is a top priority in a landlocked country such as Bolivia. In Ecuador, because of its proximity to the Coastal Region, the International Air Force, and the Compañía Guayaquilera de Aviación, the major underwater experimental air-transport operations, the second task has more to do with planning and carrying out air surveys which appear to have a more future in Colombia, while the third is responsible for the operations, on behalf of the Health, of the Salinas de Tumbaco-Buenaventura service.

Researcher work and mapping in tropical climates with its almost entire lack of adequate communication facilities, impose tremendous obstacles upon those engaged in the sometimes hunt for new sources of oil supply, etc. The fact that only the fully resourced and it is needed has been the only one to be transported for as much as a year after the fact may make this the most serious problem.

In Colombia and Venezuela, it will be recalled that there has been, in the past, much controversy over the question of an exact boundary line. In May, 1923, the Berlin Registering Commission, which acted as an arbitrator to determine the correct boundary, engaged the services of the International Aerial Survey of the Ecuador to fly over and take photographs of an area of about 1,340,000 acres south-southeast of Lake Maracibo. The entire survey was completed within

May 2, 1941



A total of 25 flying hours and one month of office work, and by least the survey would have involved eating away long expenses of undergrowth, the expenditures of everyone, one of money and years of the hardest work.

In connection with the possibilities of the aerial survey of Colombia, and, for that matter, in the whole of tropical South America, it will be of interest to quote the opinion expressed by Louis Degrange, chief biologist of the Colon Development Company, as follows:

"During the short time spent in one field over the Catemaco and Tere Rivers from Escambray to Puente Reyes, I have been able to obtain an idea of the topography and drainage of the land which has proved impossible even after several years devoted to the study of this region. From this short field I am convinced of the possibility of the aerial photograph method as the expedient of recording similar to that of the Tere Catemaco region."

It is of passing interest to recall that during one recent flight made in northern Colombia, a Mennonite Indian village was discovered, its location heretofore being absolutely unknown. The possibilities for aerial service in tropical South America are indicated and the newspaper experience at United States commercial operations undoubtedly places the notion of any aeromedical industries in the most advantageous position to serve Latin American north as the most efficient manner.

### Pedigree

One of the only two island countries of South America, Paraguay has apparently not well recently taken any serious cognizance of the possibilities of aviation, either from the standpoint of commerce or defense. Nevertheless, the transportation facilities throughout the land are extraordinarily poor and present no real possibility of improvement. The total railroad system is but 206 miles in length and the main artery of traffic is by steamer up the navigable portion of the River Plata. While this system is adequate it is extremely

The government is, however, making a good effort at the time to develop an efficient armeded organization, both from strengths of national defense and economic. Paraguay is reported to be in the process of expanding its army under the direction, it is said, of a mission from France. Attention is drawn to the principle area of defense, particularly because of the low percentage of population per square mile and the average transportation facilities already available. The military force serves at the present time mostly of but a few machines of tanks, already some or less.

absolute and has the most part of European design and a few photos taken by the French Mission.

Plans (just, however, to the immediate exposure of the nation. Five nuclear testing plans are reported to have been ordered from Moscow early in the year. A flying boat is being built up at the capital, Almaty, where a school of military aviation is to be opened.

The establishment of the School of Military Courses, as well as one for the training of pilots and the formation of flying squadrons, is included in the program for the coming year. Furthermore, proposals are afoot for the opening up of certain air lines into the interior of the country under commercial operation with modern transport machines. An elaborate system of land-air fields is provided.

## Present

There is a country in which the development of aviation appears to have wide possibilities for far or other reasons than that the government of the republic is favourable toward its development and the industries, which are very active, need it. Transportation is carried out over a mountain railway system which totals but 300 miles in length while a great part of the inland travel is still carried by troops of Lhasan drivers by Indian

Grading work largely to the activities of the United States Naval Mission to Peru, the Peruvian government is taking a serious interest in the possibilities of the development of alluvial gravel deposits. The Peruvian government is now studying Commander Harold S. Gove, has done much to break down national opposition, with the result that after a little more than three years spent in the organization and building up of gravel activity, some definite activity is looked for in the near future. At the present time the Army division consists of a few air tank pilots, a few engineers, a few mechanics, and a few good pilots. Commander Gove, it will be recalled, came to this country a few months ago with a view to persuading some American aircraft for service in Peru. The plan for development appears to be to replace the existing service on the river immediately with a new machine to be used in the same way at the same place. The machine is a rubber tire, motor, and possibly self-actuating.

The Suqummeo Service of September 30, 1935, provided for an airline between Lima and Iquitos, which is in the north-east corner of Peru, over 700 miles from the coast and at the far side of the Andes Mountains. To reach Iquitos, it is at present necessary to go, either around to the other side of South America and travel up the Amazon river at a distance of 1,500 miles, or else to cross the Andes at a height of 17,000 ft. The latter method necessitates a journey of one day by train, one by automobile, once by each side, one down by



**A MODERN SERVICE TRAINING PLANT.** The Commodore Crow (N191) Warbird (22 hp) engine and diesel heating system. The plane is a 1947 C-47 and is also equipped with emergency underswings. Current projects include the use of the plane in which the Commodore Crow is used.

canoe and from six to fifteen days in launch. Yet, Iquitos is the center of the rubber industry and is a city of intense industrial importance.

The proposed air service would be carried out by airplanes and the total journey would be two or possibly three days. It is reported that \$50,000 Peruvian pounds (about \$100,000) is included in the present plan for 1927 for the expense of this proposed service. The air operations will be from Orrego to Iquitos, passengers continuing to use the train service from there to the first named point.

It is part of the plan to carry out aerial surveying with air service equipment in addition to the air transportation.

No mention of the air operations in Peru would be complete at this time without some reference to the recent activities of the War Reliance Division in Lima and other centers in dark wide expanses of the Amazon valley. These operations are still in process and are said to be attracting the widest attention throughout the entire country.

### Uruguay

Uruguay is a country of wide open plains and rolling hills of low altitude in general and, as such, may be regarded as favorable for air operations as there appears to be plenty of prospects for the development of flying fields. There is a military aviation section under the command of the General Staff of the Army, although little information is to be found regarding its activities. To a limited extent there has been some commercial aviation activity in Uruguay a service has been operated for a time in the road between Montevideo and Buenos Aires. At the present time the Uruguayan government is trying the experiment of domestic air mail service, a temporary line having been established between Montevideo and Buenos Aires. A company, known as the Centro Nacional de Avionacion has been organized and is operating the service.

### Venezuela

Venezuela, like as many other South American republics, depends to a very large extent upon the water ways for transportation. Little has as yet been done in the development of air transportation and there does not appear to be any report indicating that the government has given much attention to the possibilities of air transportation. There is the field of aerial survey work, German interests appear to have been active, and, as already intimated, a considerable amount of aerial photography has been carried out particularly by the Venezuela-German border survey.

It is reported that the government has some airplanes of French manufacture which are used for military flying. There is, however, a very strict embargo placed upon the inspection of aircraft from abroad.

### Flow and Drag Formulae

Report No. 253, covering "Flow and Drag Formulae for Wind Tunnel Tests," is the latest of the National Advisory Committee for Aeronautics, gives the present distribution and methods found by theory and experiment for simple quadratic flow, in an infinite stream of practically compressible fluid. The experimental values pertain to air and some liquids, especially water; the theoretical information is in part, apply to wind fluids. For the cases treated, the consequences of theory and measurement is as close as to make a means of results desirable. Extensive formulae for the velocity at all points of the flow field are also given, as well as the flow rate as derived in a previous paper and given in Table I, II. A summary is given on page 25.

The present text is a slightly revised and extended form of Report No. 252, prepared by the writer for the Bureau of Aeronautics in June 1925, and by it released for publication by the National Advisory Committee for Aeronautics. A list of symbols follows the text.

This report may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.

### All-American Aircraft Display

(Continued from page 101)

The following is a continuation of the list of associated exhibitors at the All-American Aircraft Display, Washington, May 24:

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- 200 H. H. Corcoran, 112 W. 42 St., N. Y.

### Second California Aviation Conference

The Board of Directors of the California Development Association has authorized the calling of a second state conference on commercial aviation, which will be held in San Francisco May 6.

Last year the association held a conference, in which more than 200 business men participated. Out of this came a constructive program dealing with such problems as legislation, airports, air mail, etc. The second conference will feature an open airfield show, which will be held at the new San Francisco municipal airport, and a state educational tour. As many types of airplanes as possible will be assembled at the show.

On May 7 as many planes as possible will fly to Sacramento where all pilots and passengers will be guests of the Chamber of Commerce at a luncheon. Following the luncheon, the party will fly to Stockton for a stop of an hour. From there the planes will fly to Fresno, where a luncheon will be held under the auspices of the Fresno Chamber of Commerce. At the end of the party will proceed to Red Bluff for luncheon, as guests of the Red Bluff Civic Council Association. At all three cities, headquarters will be made on municipal fields and the public will be invited to inspect the planes.

### Bids Asked For Hangars

Sixty bids for two airplane hangars for the Naval Air Station at Pensacola, Fla., were asked by the Bureau of Yards and Docks, of the Department of the Navy on April 25, the bids are to be opened on May 25.

Certain requirements to be considered by the bidders are that the two hangars shall have concrete foundations, steel framing, built-up roofing on wood sheathing, roof sliding doors, side and end doors, curved covered winging doors, sliding roof ventilators, and electric lighting; and new steel building for existing hangars.

## Pratt & Whitney Hornet Engine Successfully Passes Navy Fifty Hour Type Test

**New Air-Cooled Radial on Test Develops 525 hp. and Weighs 1.28 lb. per Horse Power Installed. Likeness of Engine to Well-Known Wasp Type Enables Ready Interchange in Aircraft**



The home of the Pratt & Whitney Aircraft Company in Hartford, Conn.

SOME TIME ago it became generally known that the Pratt & Whitney Aircraft Company had undertaken the experimental development of a new type of air-cooled radial engine. It was recently announced by the Navy Department that this new engine, the Hornet, had successfully passed the Navy 50-hour type test. This test was conducted at a power rating of 525 hp. before it was begun, and in the case of a formal test conducted in any power plant on an air-cooled type of engine. However, it is believed that the minimum of weight per horsepower in this test is lower than ever previously obtained on any air-cooled type of engine, either land or afloat.

The Hornet was especially designed for the Navy Department for use in their warship-surface or landing type of airplanes. The engine is by far the most powerful of its kind as a general type. The test referred to above was for the direct drive engine. It is reported that a geared type will also be undertaken.

### Similar to the Wasp

The Hornet engine is nearly identical in design to the well-known Pratt & Whitney Wasp. The principal difference in size or displacement. The Wasp is approximately 1300 cc in displacement, as against about 1200 cc in for the Hornet. The similarity in design of these two engines is best indicated in the illustrations showing the Wasp and the Hornet side by side. From a service as well as manufacturing standpoint, it is of unusual interest to learn that approximately 80 per cent of the total parts of the Hornet and Wasp engines are identical, and 100 per cent interchangeable. The engine accessory units of the engines are exactly alike, including even the mounting frame, so that Wasp and Hornet engines can even be interchanged readily in the same type of airplane.

Under as detailed design a reversed aspect that certain parts are larger in the case of the Hornet, there is no difference. All at the extreme bottom of the Wasp, including the oil pan and mounting, the tailing crankshaft, the fuel pump assembly main crankshaft section, the exhaust valve mechanism, etc., etc. are all found in the Hornet design.

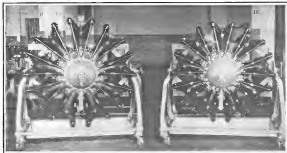
The diameter of the Wasp engine is about 20 in., as against about 18 in. for the Hornet. The Wasp weighs less than 500 lb. and the Hornet less than 750 lb. The over all length of the Wasp engine is approximately 48 in., while in the case of the Hornet it is 64 in. All of these figures are approximately in line, as the Hornet engine is roughly 25 per cent greater in displacement than the Wasp.

### Test Details

The Wasp engine is rated in service at 425 hp. at 1800 r.p.m. The actual rating for the test engine of the Hornet 525-hp. engine has been placed at 525 hp. at 1800 r.p.m. The tests have test referred to above was run on a rating of 525 hp. at 1800 r.p.m., although it is a fact that during the last few hours of the 50-hour test the power rating was 525 hp. at 1800 r.p.m. Upon the completion of the 50-hour test has passed the engine was then run for three hours at approximately 5250 r.p.m. As was to be seen from the above facts the 525 hp. rating at 1800 r.p.m. is equivalent to a power of 1000 hp. at 1800 r.p.m. per sq. in. while the power developed during the 50-hour period indicates a mean effective pressure of 135 lb. The compression ratio of the Hornet is 16 to 1, so that the engine can be operated on straight aviation gasoline without detuning, or the requirement of a deposed fuel, which is not permitted in standard Navy service.

On the basis of its maximum power output at 1800 r.p.m. the weight per horsepower of the Hornet engine is 2.5 lb. per hp. so that the engine can be operated on straight aviation gasoline without detuning, or the requirement of a deposed fuel, which is not permitted in standard Navy service.

The first experimental Hornet engines are now being fitted in places, and will shortly be in the air. The plans designed as well as the Navy Department are expecting a considerable improvement through the use of the large radial air-cooled engine. However, in the warship-surface planes which serve as its main importance. Every power used in the



The Pratt & Whitney Havoc (left) and Wasp engines showing the radial arrangement in design. The somewhat larger size of the former will be seen as clearly in every proportionately larger bolt or tap-hole.

Now that the second type of engine is nearing the experimental development stage, it is interesting to review the background and present activities of the Pratt & Whitney Aircraft Company. It was not less than two years ago—do be exact, in August, 1925—that the Pratt & Whitney Aircraft Company was organized and began its activities. Within about ten months from that date the first experimental Wasp was placed upon bench test, which it completed most successfully. Within one or two months following the test, a number of permanent engines were constructed, and these were placed in the air as reference Wasp engines—the Havoc and Curtiss planes. This, followed a long series of tests. As a result of these tests, which continued through the summer and autumn of 1926, the Navy Department announced its intention to adopt the successful radial for its single and

two-place fighting planes. Their decision was based not only upon comparative performance characteristics, but because of the inherent simplicity of this radial six-cylinder type of engine. As a direct result of this decision, an order for 300 Wasp engines was given to the Pratt & Whitney Aircraft Company.

In August, 1925, all of the activities of the Pratt & Whitney Aircraft Company were confined to a small corner of the present manufacturing building where engineering offices, as well as an experimental shop, occupied not more than 2,000 sq. ft. of floor space. The experience from that time forward was rapid. The small experimental shop capable of producing only the first engine was enlarged so as to produce the twelve experimental Wasp engines which were constructed. In great measure the confidence of the company in its Wasp engine that during the summer of 1926, the equipment of

their plant for the production of Wasp engines in quantity was installed. This applied not only to the construction of machine tools, test equipment and other necessary manufacturing facilities, but even the special tools, jigs, and fixtures were prepared. As a result of this foresight, while the contract for the 300 Wasp engines was signed in early October, nevertheless, during November, six provision Wasp engines were delivered, the first of which completed a successful fifty hour test. In January, twelve engines were completed and shipped, four fifteen in February, and, finally, in March the normal schedule of twenty Wasp engines per month was actually met.

The operations of the Pratt & Whitney Aircraft Company were spread throughout all floors of the building. The second was used for rough work of her tools, forgings, castings, etc. The first floor is now given over to engineering, general offices, etc., although a part of it is used in the receiving and shipping department, and inspection of incoming material. The second floor is now given over to the assembly of engines, Government and plant inspection, tool stores, and experimental and test shop. The third floor is entirely occupied by machine shop. The fourth floor is partially equipped with machinery at this time, and passed plans out for complete equipment this floor as a machine shop. All of the machine tool equipment, as well as all other manufacturing facilities, are entirely new, and of the very finest type.

#### Research Facilities

The Aircraft Company, which is an entirely separate and distinct company from the Pratt & Whitney Company, makes provision of all of the important and major parts of its product Curtiss and parts are made directly in the Aircraft Company are purchased from Pratt & Whitney. These parts include threaded pipes, as well as most of the other miscellaneous smaller parts. In the case of these parts, the equipment of the Pratt & Whitney Company is utilized to advantage by good advantage. The special laboratory, well-known

and test-making facilities of the Pratt & Whitney Company are also completely employed by the Aircraft Company, these facilities available facilities, which, for the smaller company, would be out of line and expensive. The equipment for engine engines is of unusual interest. The manufacturing plant is located in the very center of the city of Hartford. In spite of this, there are at present seven test houses, and it has been found possible to operate all of these at the same time, it necessary, and still thoroughly protect the engine house. This is accomplished through a complete girdling of the engine during test, and the engine construction of the test houses which allows straight air to come from the propeller. Four test houses are available for the testing of production engines, having no test house for the experimental testing of Wasp engines, and one for the experimental testing of Havoc engines. The seventh test house is employed solely for research purposes. It is equipped with a dynamometer, and provides for the testing of single-cylinder test engines, of either the Wasp or Havoc type.

#### Helium From Hydrogen

A report from Berlin states that two specialists working in the Chemical Institute of the Berlin University have succeeded in changing hydrogen, which is the lightest of all elements, into helium, which is the next lightest. The transformation of hydrogen into helium took place by means of what is known in a scientific process. Palladium, a metal and alkali platinum, was treated as the catalyst agent. When hydrogen was subjected for a few days to the influence of finely distributed palladium, it was found that helium resulted in small quantities.

If the report is correct, this significance of the experiments in deuterium. It will be the first time that helium has obtained the development of a heavier atom from a lighter one. Whether or not it has, the announced significance is, however, somewhat vague.



A spread here in the machine shop of the Pratt & Whitney Aircraft Company where Wasp and Havoc engines are built.



A view of the main assembly line of the Pratt & Whitney Aircraft Company. The "cradle" beds upon which the engines are assembled.



LT. G. R. HENDERSON, U. S. N., AND THE NAVY VOUCHER "CORSAIR" WITH "WASP" ENGINE.

## A New World's Record with a "WASP" Engine.

With no unusual preparation, and in the course of its standard service test, Lieutenant Henderson established a new world's altitude record for sea-planes with a Navy Vought two-place Observation Fighter. The "Wasp" engine was not super-charged, and was a standard service type in every detail.

This remarkable performance is the natural result of superior plane and engine design, and skilful piloting. Again the Navy gives substantial proof that its flying officers and service equipment are second to none.

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**PRATT & WHITNEY AIRCRAFT CO.**  
HARTFORD, CONNECTICUT



D E P E N D A B L E E N G I N E S



THE NEW CURTISS "SEA HAWK" AND BOEING "FIGHTER" BOTH "WASP" EQUIPPED.

## New Navy Shipboard Fighters.

Competitive performance trials now in process at the Naval Air Station at Anacostia indicate a very superior performance to present service types.

These new planes are designed around the "Wasp," and it may safely be said that they will establish a new era in Naval aviation.

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D E P E N D A B L E E N G I N E S

## The New Hamilton All-Metal Airplane

*The Latest Product of the Hamilton Metalplane Company. A Four-Passenger All-Metal Monoplane*

THE HAMILTON METALPLANE COMPANY, of Madison, Wis., has just completed the construction of a very interesting monoplaner passenger and mail plane of all-metal construction throughout. The cabin, which is very roomy, holds four passengers, whose view of the country over which they are traveling is greatly enhanced by the somewhat novel window arrangement provided. Owing to the depth of the overhead wing, the ends of which cover a wide proportion of the sides of the fuselage at the cabin, windows are installed in the lower portion of the wing struts instead of in the sides of the fuselage. At the point where these horizontal struts meet the side of the fuselage, an arm and a pivot point permit the passengers elbow room not found in many other types of plane.

Access to the cabin is through a door in the left side of the fuselage and head room when entrance is arranged for by having one of the wing struts in fold up. The pilot sits ahead of the passengers in an adjoining cockpit which is covered with a streamline transparent covering from which he has an excellent view. The pilot's cockpit has an enclosed entrance. In the rear of the passenger cabin is a baggage compartment with a capacity of 50 cu. ft.

### Metal Fuselage

The entire fuselage is metal covered and is of elliptical cross-section which not only makes for strength of construction but greatly reduces the head resistance. The entire tail unit is metal covered and braced externally with steel tubing. The stabilizer is adjustable in flight and the elevator operating bars or link post, is concealed inside the vertical fin which, also, is adjustable in flight. All control wires are covered inside the fuselage with the exception of a few feet leading to the rudder and ailerons.

The wings, which are full cantilever and tapered in plan form and in thickness, are of a modified NACA high lift section. The construction of the wings includes three metal wing beams of very considerable strength individually. The two wings are attached to the fuselage by means of six large aluminum cantilever steel bolts having a factor of safety of four times.



The Hamilton Metalplane showing the outstanding construction and the aluminum covering for its exterior.

Two forty gallon gasoline tanks are located in the wings providing gravity feed to the engine. The landing gear is of the normal split axle type with the suspension strut running directly up to the wing strut and fitted with compression rubber shock absorbers. The wheels are 22 x 2 in. fitted with Goodyear tires and Dunlop wheels. The undercarriage track is also fast.



A general view of the Hamilton Metalplane showing the method of opening the top of the pilot's cockpit.

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Des Moines, Iowa

Dayton, Illinois  
Dayton, Illinois  
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B.B.T. FLOODLIGHT



A general view in one of the shops at the Hamilton company where principal components are constructed.

The engine, a Wright Whirlwind, is mounted on a built-up metal chassis mounted on very rigid construction. An 85-hp. Merlin engine, standard and Pietenzo instruments, are installed together with a Hamilton propeller either at need or of metal construction.

#### General Details

The general details of the plane are as follows:

Wing	40 ft. 0 in.
Span	30 ft. 0 in.
Length	20 ft. 0 in.
Weight empty	1,000 lb.

The wings can be mounted in twenty minutes without difficulty and the motor plane stored in a space 22 ft. wide and 10 ft. long.

The Hamilton Motorplane has been thoroughly flight tested by Capt. Victor E. Bertram, formerly operations manager of the P.H.T. Air Service, who pronounced the machine very stable in flight and easy on the controls. The performance of the plane, as indicated by the air speed indicator, which is, of course, subject to accurate checking, is as follows:

Maximum speed	100 m.p.h.
Cruising speed	80 m.p.h.
Stalling speed	35 m.p.h.

A load of 1,000 lb. in addition to gasoline and oil was carried on this test and the take off was remarkably quick.

It is understood that the Hamilton Motorplane is being placed on the market at once for summer delivery.

It will be recalled that the Hamilton company (The Hamilton Aero Manufacturing Co.) also manufactures, in addition to both wood and metal propellers, dashboards, gauges which have proven extremely successful fitted in several types of commercial aircraft.

### New Eaglecock Agents

Approved type certificates have been received from the Aeronautics Branch, Department of Commerce, Washington for both combination and long wing Eaglecocks. These certificates confirm airplane's previous faith in the instructions of the plane.

William K. Ryan, of the Alexander Aircraft Company, has made what is believed to be a record for long distance delivery of the airplane over a period of two weeks. Ryan delivered an Eaglecock to the U. S. Naval Service, New York City, having taken it to Denver and delivered one to the Northwest Airplane Sales Company, Dickinson, returned same to this city and delivered one to Concord, Mass.

W. L. London, has sold his franchise for Northern California, with the Alexander Aircraft Company's consent, to James L. Moberly of Fresno. Mr. Moberly is a Driven Traveler. He has not yet sold another one, and will take time to study the market.

Two new dealers bought London's plant and his brought him eleven new Eaglecocks from the Denver factory. Bill Gorman and A. J. Murray, both pilots, have purchased a demonstrator Eaglecock from the Oklahoma dealer and have taken a sub-leasehold in Northwestern Oklahoma. Arthur Kelley studies Alexander pilot agents to leave Denver in a day or so to join them.

James S. Charles dealer in Northern Georgia and Virginia has been awarded additional territory, the District of Columbia.

### Aero Engine Performance

His Royal Highness, British Secretary of State for Air, recently informed, in the House of Commons, the aircraft reliability of modern engines, saying that some types now run 250 h. before it is necessary to have them overhauled.

The Napier Lion engine is a type which by its reliability has enabled such efficiency to be attained, that it is not necessary to take a Napier Lion down before it has run 250 h.—approximately 25,000 m.p.h.—and then it is more as a precaution than because there is any need for work to be done to the engine.

Some Napier engines in use by the British Royal Air Force have been in service for over 100 h. without being dismantled.

On commercial service Imperial Airways use a number of Napier Lion engines. Their reliability runs for 300 h. or approximately 30,000 m.p.h.—before it is considered necessary to take them in to see if any work is required to be done.



Photo by Times Photo Staff

## You can't "drown" Valspar!

**DURING** the recent floods in India, Valspar again demonstrated its wonderful waterproof qualities for which it is famous the world over. For hours at a time the Valparadise bus of Calcutta had to plow through the flooded streets, but when the water and mud were swept away, the Valspar finish always came up radiant!

Because Valspar is so remarkably waterproof and durable, it is the one finish that is universally used to protect surfaces exposed to water, weather and hard wear. On airplanes of all kinds it has met with such widespread favor that now it is known the world over as the standard varnish for airplane use.

In the aviation service, Valspar has proven many times its remarkable ability to "stand the job." Valspar protected the NC-4, the "Round-the-World" planes, Commander Byrd's North Pole Polarizer and dozens of other famous planes, not to mention the many hundreds of planes in daily service.

### Nitro-Valspar—the all-lacquer finish

As a companion to Valspar, Valentia & Company offer Nitro-Valspar, the all-lacquer airplane finish. To be sure of satisfaction use Nitro-Valspar if you want lacquer, and Valspar if you want varnish. Each is the most durable and economical finish of its type in use today.

VALENTINE'S  
**VALSPAR**  
The Standard for World War Planes

The Valparadise 100  
Schneider Cup winner



A close view of the Hamilton Motorplane—a high wing standard procedure with extra accommodations for four passengers. The engine is a new 85 Wright Whirlwind.

## Stinson Produces Five-Place Cabin Monoplane

*Whirlwind Engine Cabin Monoplane Machine  
Bears Striking Resemblance to Cabin Biplane*

WHAT WILL undoubtedly prove one of the most interesting exhibits at the All-American Aero Show of 1937, is to be held at Washington beginning May 9, is the experimental monoplane being shown by the Stinson Aircraft Corporation, of Detroit. The features of the plane is modeled after the Stinson biplane, the *Excelsior*, with the exception of the cabin, which, as the *Excelsior*, is upholstered in leather, wall seats arranged like those of an automobile. The new plane is to be fitted with rubber chairs, Knappe cushions, and arranged to seat five people, instead of four, with baggage, may be carried.

Like the biplane, it will be a dual control machine. The Stinson *Excelsior* has been equipped with two engines, the first one to be used as a backup. Also, the first air starter is to be placed on an airplane has been introduced to the new Stinson plane.

This is known as the high pressure engine starter and has been developed by the Detroit Air Appliance Corporation.

One of the important features of the machine, however, is its new radial engine. This is designed to give a slow landing speed, at the same time maintaining a high maximum speed in the air. The plane will be powered, as is the *Excelsior*, with a Wright 500 hp. Whirlwind engine. It is expected to attain a top speed of 130 m.p.h., with a possible cruising speed of 115 m.p.h.

Nearly all the controls will be take overboard. The plane will have a wing span of 40 ft., with a wing area of 210 sq. ft. Stinson has indicated that all the standard planes will have the air starter, air brakes and take overboard standard equipment.



The Stinson five-place cabin monoplane (Wright Whirlwind engine)

### The Cabin Plane

By David L. Petros

In the early days of flying, it was customary to start the pilot as much as the plane as possible. In the infancy of the art of aviation, it was, perhaps a good idea, because of the general lack of knowledge and experience. In the popular mind at that time most accidents were attributed to air pilots and by making the pilot directly in front of the engine, it was thought his advantage was the back. About the only thing relieved by this seating arrangement was unbraked turns, but it provided no protection from accident and exposed the pilot in all kinds of weather.

Progress has changed this and designers now place the pilot further in the rear, making him in a cockpit fitted with a windshield, with head and shoulders only exposed. For military purposes the cockpit arrangement is ideal. It provides limited protection from the weather and excessive speeds and gives a degree of vision to the pilot which is only limited by other factors.

But in commercial flying, weather protection is absolutely necessary. Yet it is hard to appreciate the difficulties of many pilots for the cabin plane.

I divided the day, when I was supposed to go to Detroit and bring back a cabin plane. But the day came and I started on my mission. After several stops around the field with Eddie Stevens, I took off for Minneapolis, through Chicago, Milwaukee, La Crosse and St. Paul. I carried a full load and couldn't say my very worsted. Things seemed to strain and different. Instead of the long and the scope of a racing engine, there was quiet. The rain of air was also

noisy. In short, my progress, as well as myself, were really comfortable while flying.

After several trips on the air tank ran between the Twin Cities and Chicago, I became concerned to being reduced while flying.

A properly designed cabin plane, with the pilot correctly seated, should give more vision to the front and downward than the old style cockpit arrangement. Vision in the back and upward is not really necessary in a commercial plane. In a military plane it is just as important to be able to look directly backward as it is to see forward.

To be able to climb into your plane should just as you would be for a spin in your motor car is also an essential of correct flying. There are no landing helmets or goggles in the cabin.

Another and very important consideration is the fact that it is going to be very much easier to roll the plane on the deck of the cabin plane. When in the air, in the face of the propeller blast, the rear of a high-powered engine, the discomfort from oil and bad weather, are facts and likely to attract purchasers who don't fly with a maximum of comfort.

Designers should remember that the enclosed passenger cabin should be provided with the same protection devices as the cockpit. Life belts should be provided, seats should be fastened down, all sharp points should be padded and doors should be arranged to open easily in case of trouble.

The question is often asked of whether door up and do front and nose up or the plane. In the writer's experience he has never had window fog, nor has he seen instances of frost and snow lodging on the plane. The propeller blast does most to keep the forward glass free from mist and snow.



*The Loening Amphibians are equipped with*

## STANDARD STEEL PROPELLERS



INCREASED performance and reliability—better resistance to climatic changes and to the effects of rain, hail and salt spray—are some of the reasons for the increasing use of Standard Steel Propellers on modern Army, Navy, Commercial and Private Owned Planes.

There are many other reasons which we will gladly send upon request.

Standard Steel, Adjustable Pitch. All Metal Propellers are designed not only for different power ranges but to give maximum performance under the most varied flying conditions.

## STANDARD STEEL PROPELLER COMPANY

PITTSBURGH, PENNSYLVANIA



## The Bellanca Monoplane - Holder of the World Endurance Record

*A Detailed Description of the Plane which Remained in the Air Over 51 hr. and Will Attempt the Atlantic*

**T**HE REMARKABLE flight of Pilot Chamberlin, and  
Aston on April 12-14 in the Bellman monoplane, and  
long ago a new World audience round for airplane,  
has brought this somewhat distinctive Italian design again  
into the limelight and while the machine is not new nor has it  
been neglected in the columns of *AVIATION* in the past, never-  
theless, a full and complete de-  
scription of the plane in greater  
detail than has previously been  
possible will not be out of place  
at this time.

Charles M. Feltzner, a designer of international impact, first turned his attention to the design of the type of cubic monoplanes in which the world record breaking machine is a development, in 1921. The very first machine of this type was also with an air-cooled engine was a marked success, the first winning thirteen miles in various airplane races. In 1926, a later model of the same basic type, and built by the Wright Aeronautical Corporation in cooperation with a Wright Waterford engine, was the highest efficiency prize for commercial planes of the National Air Races at Milledale, Md., in 1926. The Wright Company built a second plane of the same type to Mr. Feltzner's design and it was this identical machine which won up the World endurance flight three weeks ago. This machine was fast, sporty and efficiency because for commercial use at the National Air Races at Philadelphia last year and was, in fact, by its own merit, the best when the record flight was made, was the Waterford engine, with which it was fitted, was

Then, the Bellanca Monoplane is not an experimental design produced especially for record breaking but is a standard model commercial type and, in fact, the standard machine in which the Wright Company, early this year carried out a hot flight in Washington, D. C., from New York City with a full load of five passengers with a view to obtaining a figure of cost of operation for noncompetition purposes. It will be recalled that past endurance records were obtained.

In the design of the plane, which is a six-seater (including the pilot) engine machine, every procedure has been made for maximum safety. The landing speed is very low and the plane has a very good gliding angle, namely, 12½°, and the ascent at low speeds is very good. The pilot's vision is wide and unobstructed and considerable attention has been given to the reduction of the fire hazard.

The wing construction is simple and conventional. The two spars are of spruce, solid "T" beam section. The ribs are of spruce, lamin wood and balsa, with triangular braces, making a very strong and light construction. The true airfoil has

been tested to over 600 lb. before breaking. For a load factor of 7 only 375 lb. test load is required. Their weight is 12 oz. each. All the wing ribs are identical with the exception of two, namely, the wing tip ribs which, one on each side, taper towards the tip cap-clip. The wing covering is fabric, treated with seven coats of dope and one of Velspar. The two ribs

of the wing are pin-pointed to the fuselage by long screws at a section of the fuselage which is fixed to the wing section.

The wing is broad anteriorly by the well-known fulcrum struts, two on each side, extending from the lower fuselage to

from the lower margin, and  
pen to a point about two-thirds  
of the semispan from the wing  
root. These struts are located  
in the section of an airfoil at

The use of these struts simplifies the wing construction and elevates tapering the monoplane.



The **Feltzess Wreathless** (Weight Wreathless) which set up the new international record, being by the **Wreathless Wreathless**, New York, N. Y.



## The "ALL-IN-ONE" AIRCRAFT POLICY

or separate "independents" policies, will meet all the insurance requirements of those engaged in any branch of the Aircraft Industry.

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4th. These Companies maintain strong relations with their Agents, Builders and Subcontractors.



The Bellanca Monoplane (Wright Whittford J-4) in flight

obscured view down with the exception of the very narrow blind spots caused by the presence of the landing struts. The chutes in the cabin are completely unobstructed.

The total space in the cabin is 105 cu. ft. not including that devoted to the fuel which would indicate that the machine is well suited to road and freight transport by air.

The tail section of the fuselage, of aluminum-aluminum sheet tube is already mentioned, is attached to the cabin section by means of four girders. The tail section, including fin and rudder, is constructed of spruce, balsa wood and oak, covered with fabric doped and varnished. The elevators are unbalanced, while the rudder, of single oak, is balanced. The undercarriage is of the split axle type although the stream-line "Spencer" which characterized the 1926 machine have been abandoned. The tail skid, of birch, is located entirely outside the fuselage and can, therefore, be readily detached and replaced.

The gasoline tanks, two in number, are located one in each wing root, with a total capacity of 84 gal. These tanks are constructed of welded sheet aluminum and the fuel is, of course, at the gravity type. An reported last week in Aviation, for the record flight an additional tank was located in the cabin with a pump feed up to the wing tanks. The gas-

oline lines are of copper tubing and are located with a view to their being easily accessible. With the 5 gal. of fuel in the engine section, gravity fuel feed, and no water at all, the plumbing is brought to a minimum.

The present details of the plane are:

Span	45 ft. 4 in.
Length	30 ft. 8 in.
Height	8 ft. 8 in.
Wing chord	8 ft. 8 in.
Wing area	312 sq. ft.
Wing weight	2,500 lb.
Wings to pay load	1,075 lb.
Wing load	10.4 lb.
Wings per square foot	12.7 ft.
Wings per square inch	12.7 ft.

The following performance data, supplied by the manufacturer, was taken with pilot, five passengers, averaging 170 lb. each, and 150 lb. of baggage. The tanks were full. The total weight of the pay load was 1,225 lb.:

High speed (1000 rpm.)	130 m.p.h.
Cruising speed (1000 rpm.)	100 m.p.h.
Maximum at 110 m.p.h.	100 lb.
Full consumption at 120 m.p.h.	22 gal. per hr.
Wing loading (5 m.p.h.)	10.4 lb.
Wing loading (10 m.p.h.)	10.4 lb.
Wing loading (15 m.p.h.)	10.4 lb.
Wing loading (20 m.p.h.)	10.4 lb.
Wing loading (25 m.p.h.)	10.4 lb.
Wing loading (30 m.p.h.)	10.4 lb.
Wing loading (35 m.p.h.)	10.4 lb.
Wing loading (40 m.p.h.)	10.4 lb.
Wing loading (45 m.p.h.)	10.4 lb.
Wing loading (50 m.p.h.)	10.4 lb.
Wing loading (55 m.p.h.)	10.4 lb.
Wing loading (60 m.p.h.)	10.4 lb.
Wing loading (65 m.p.h.)	10.4 lb.
Wing loading (70 m.p.h.)	10.4 lb.
Wing loading (75 m.p.h.)	10.4 lb.
Wing loading (80 m.p.h.)	10.4 lb.
Wing loading (85 m.p.h.)	10.4 lb.
Wing loading (90 m.p.h.)	10.4 lb.
Wing loading (95 m.p.h.)	10.4 lb.
Wing loading (100 m.p.h.)	10.4 lb.



A close up of the Bellanca Monoplane (Wright Whittford J-4) during landing for the endurance flight.

# Where Starting Must Be Dependable



Showing installation of Heywood High Pressure Injector Starter on Wright Whittford Motor. Weight 25 lbs.

Pilots, whether in arctic cold or tropic heat, know the absolute necessity of dependable starting.

Wilkins prepared for his polar flight by installing the Heywood High Pressure Injector Starter on one of his planes realizing its dependability and instant starting features. His telegram confirms his judgment in this selection.

Eddie Stinson too appreciates and recommends this never failing starter as the highest type of aircraft equipment.

Simple pressing of button, conveniently located on dash, producing a positive, instant start thru high compression and forced carburetion are features that have earned this enviable recognition of supremacy.

Write today for complete information, technical data, prices, etc.

**DETROIT AIR APPLIANCE CORP.**  
6547 ST. PAUL AVE. • • • • • DETROIT, MICH.

Manufacturers of Heywood High Pressure Injector Starter

## The Airport—A Municipal Stepchild

**Western Municipalities Take Cognizance of Growth of Commercial Aviation And Plan Airport Projects Aggregating Approximately \$8,000,000**

**F**OR YEARS the airport has been the stepchild of the municipal family, neglected, scorned and reborn, while attention has been lavished upon those promising twins, Railroads and Shipping. Nobody cared much about it except a chosen and exclusive few, whose the rest of the community called "nuts." Nothing that anybody else could use was permitted to be accepted by it. Any old space that nobody wanted, or thought they might want in future, was good enough for it. There, nobody there in no wonder city able to host a first class dinner and one, at least, has a field that is downright dangerous.

But now the stepchild has been named in old Uncle Sam's will and the rest of the nation cannot do enough for him. In fact, he seems likely to become the pride of the family. It and he is that whatever city field was not needed for some more sensible purpose was plenty good enough for those long youngsters to go make their time in trying to make some four or five million a year, but not say more. Some writers have prophesied, or are enlightened upon airport projects representing an investment of approximately \$8,000,000 and this is typical. Other communities are doing or have done in fact, proportionately.

### Millions Spent on Airports

Indeed, it seems that within the year a wave of interest in airports and airport agencies has swept over the entire Pacific coast region, with the result that Portland has spent approximately a \$1,200,000 airport, San Francisco has spent nearly \$100,000 in leasing and improving a temporary field and is committed to making a permanent field of a cost approaching \$1,000,000 more; Oakland has committed itself to the expenditure of \$600,000 for new land on which to build an airport; Fresno was to vote in April on a bond issue for acquiring a site which, now is used under lease, Santa Monica has spent \$600,000 for a site; Los Angeles has plans for a \$300,000 model airport under way; and in Los Angeles the city council is busy endeavoring to determine a site on which to build an airport that will cost, it is estimated, on the basis of the country's airport average, \$3,000,000 to \$5,000,000. It is not possible that this site will be chosen and a bond issue be voted upon by the people at the municipal election in May.

Along with these major projects should be mentioned a three or four smaller ones where the additional expenditures of municipal or county money are contemplated at present, a great deal of preparatory work has been done in recent months. These include the Santa Monica Airport, representative an investment of between \$500,000 and \$600,000; Bonita Field, in Malibu, Orange; the Kern County Airport at Bakersfield; Hanford, at Hanford; the Fresno Airport, and the field at Las Vegas, Nevada. Though the total value of all these enterprises does not represent as much as a sixth of the larger cities will spend, yet considering the proportionately small of these smaller communities it presents a striking evidence of the new attitude toward aviation.

Except Santa Monica, all the fields named are used by the air mail. Indeed, it was the needs of this new method air mail routes which called some of them into being. Santa Monica's enterprise is a definitely commercial affair established by the city government in an effort to make that city, already the home of the Douglas company, a better aircraft manufacturing center.

In setting up these fields, fearful problems of money management have been encountered and solved in almost as many

ways as there are fields. Portland's enterprise has been financed and will be carried to completion through the State of Portland Convention. This body, taking the view that a port was a port, whether for sea travel or air travel, has assumed the function of providing the city with an air harbor in the same manner that its original radically regarded it to provide the city with docks and wharves for marine commerce. The money for the enterprise has come from donations from, rentals on real-estate land and other revenues of the commission, as the cost of the airport has been met without taking a penny directly from the pocket of the taxpayer or taxing a dollar's worth of bonds.

### To Encourage Manufacturers

A somewhat similar plan is contemplated by Oakland, which has just arranged to lease over 600 acres on Dry Farm Island to a site for an airport. The two projects have a further point of resemblance in that their proponents hope to have each become a factor for export manufacturers. Oakland's plan is not so definitely crystallized as is Portland's, however, but, as the northern city's airport will be completed by May in ground at the edge of the island and the Oakland field is already filled and leveled, it is seen as far ahead. The Oakland financing, like that of Portland, is to be done out of the savings of the port.

Malibu, Borne and Santa Monica have made their progress in the matter by considering the airport as a part of their park or recreation system, with one difference however. Malibu and Borne have utilized recreation and as a site for establishing the air field while Santa Monica has created an amusement district under the California parks and play grounds act and issued bonds to pay for its land. The amusement district represented the entire city, so that the bond issue is virtually a city security, but in planning in this manner, the city's limit on bonded indebtedness was not exceeded, thus those authorities approved the plan.

Both Malibu and Borne have upon money derived directly from taxes to improve their airports, Borne having loaned to the airport of nearly \$25,000 as a "perk." The remainder of the also had been given the city as a park some time before. The Borne airport has the distinction of being only a mile from the city's business center, the malibu distance of any western air mail field from the city's business.

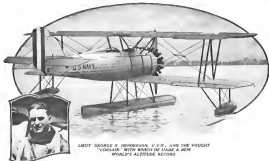
The land owned at Malibu is mostly property, being the coastal portion of a tract at the county fairgrounds.

The Borne field is owned by the county, having been taken over as a tax item. The Bakersfield airport is leased by the county from private owner. The city of Borne and the County of Washoe jointly own the field at Reno. Ryan Field and Val Field, at Los Angeles, and respectively by the Pacific Air Transport and the Western Air Express, mail contractors, are leased from private parties.

### Field Costs Considerable Sum

It is only one case, that at Truma, is any considerable sum paid for the use of a field, either for public body or private contractors. The Fresno Chamber of Commerce has been paying \$5,000 a year rental on a field there which is thrown open to public use free. This does not represent the only sums made on private grounds between local authority to expend money for airports in such a fashion. Numerous men of several communities, notably at Salt Lake City, have

# Altitude Performance



LEFT: GEORGE B. HENDERSON, U.S.N., AND THE VOUGHT "CORSAIR" SETTING NEW RECORD IN CLASS A NEW WORLD'S ALTITUDE RECORD

A STANDARD "Corsair" Service Sea plane, piloted by Lt. George B. Henderson, U.S.N., established, on April 14th, a new World's Altitude Record carrying 500 kilograms (1102 pounds).

The official height attained was 6,780 Meters or 22,178 feet.

The actual Useful Load carried exceeded 1640 pounds, including pilot, fuel, equipment, etc., and 1102 pounds ballast.

This new Vought has been in active ser-

vice since last October, and made its record breaking flight as a fitting climax to the successful completion of Official Navy Department Service Tests wherein it had conclusively demonstrated its Superior Performance, Flying Qualities and Suitability.

The Record was made without special preparations, the airplane, engine and propeller being the original service equipment delivered in October, 1936, and used, without changes or modifications, in all flights since.

"The 'Corsair' is an airplane designed by the competent Vought Engineering Organization, around the P. & W. 'Wasp' Engine.

**CHANCE VOUGHT CORPORATION**  
LONG ISLAND CITY, NEW YORK

been called upon to build hangars for contest and spectators. That at Salt Lake City, however, produced \$180 a month rent, paid by the Government, which is turned over to the contributors who raised the \$12,000 to build the hangar.

The financing of the Los Angeles airport, when it is built, probably will be through a bond issue, as the case of the small airport near Los Angeles and others indicated. Whether, however, this will be a city bond issue or one secured by an airport district, along this plan adopted at Santa Monica, is doubtful.

#### San Francisco's Problem

Has San Francisco's financing in to be done is not yet settled. The preliminary expenditures have all come out of a budget item covered by the tax rate. Indeed, San Francisco apparently is the only city in the West with legal authority to expend money from taxes on an airport. This is because the voters a year ago approved a charter amendment empowering the city to purchase land for such a facility. San Francisco also is the only city, so far as is known, which is making any detailed working arrangements as to the desirability of various sites before locating its municipal flying field. Local conditions definitely favor a great deal on the San Francisco peninsula and the airport committee of the supervisors, the city's governing body, had as many conflicting statements presented to it by proponents of one different site than the investigation was deemed a necessity.

The ongoing studies the planning of municipal airports at all cities of the proposed plan by the Western Bureau. The results from these statements will be used as a basis a year hence for determining the meteorological conditions of each. The inquiry also includes test flights and landings to be made over the sites before finally by the State Board. The city is leaving the expense of these operations. The airport committee, through Chairman Milo F. Kent, has also arranged to have an aerial investigator visit all the air fields in the West and report on conditions of each, to aid the committee in determining what expenditures should be made and if it has bought the land for the port.

Brownson among the supervisors seems to have levied some sort of a tax-purchase arrangement for acquiring that land, with payments of \$100,000 or so being made annually until the purchase plan has been paid. Meanwhile, the city would hold the land under lease. This is favored in preference to a bond issue because the city has a number of other projects which would require issuance of bonds and it is desired to conserve the bonding power. However, the municipal district plan adopted by Santa Monica has some provisions in San Francisco.

This need to move the bonding power has been one of two main issues preventing other cities from raising bonds for the construction of airports. The other deterrent is the reluctance of city governments to ask authority to issue an-

swers in such large amounts as have been necessary for establishing these aerial facilities. Use of tax money presents legal complications, besides constituting in a few years a burden which should be distributed.

An airport presents this problem, as distinguished from all other public improvements, the great bulk of its cost is initial. If a city has a harbor which it is desired to develop, the work can be spread over a number of years. Roads, sewers, bridges, even parts of a water supply system, can be built a little at a time, as needed or as funds become available. But an airport must be considered almost as a whole. The land which must be purchased in order to give one airplane landing space is adequate for a score of localized airplanes. The only additions necessary to enable any reasonably large airport to handle more planes are more hangars, increased office space and more improvements, representing relatively but a small portion of the cost of the facility as a whole.

Admittedly, aviation is not now at such a point that it can carry the weight on these heavy expenditures alone. A harbor is different; its development can be kept just a little in advance of the demands of commerce. A street system is different; its extension can be pushed a little at a time, as residences are built farther and farther from the city's center. Elliot pays his own way, as very easily does the one through the increasing volume of shops from the other through the increased value of property and hence larger volume of tax money.

But an airport represents a large expenditure which must be spread on the public mass mind, with no opportunity of making it pay its way for some years to come. At the same time, the completed city government is confronted with the fact that if it does not provide facilities for aviation now, competition will draw air travel and air commerce elsewhere.

The result has been a series of legal battles—at least they are reported on work in some quarters—that the airport is a part of a part of the city's harbor, or something else. The result seems to be in legislative action empowering committees to conduct airports as their own are empowered to construct roads, bridges, docks, and other public works.

Merely, there is no difference between one public work and another—between a harbor, which is a utility and an airport, which is a similar utility devoted to transportation of a different kind of road. The airport is merely a convenience for which no local problem has been made. There is no shadow of merit about that it is but as right for a city to build itself to provide an airport as it is for the same city to build itself to build a dock.

However, there is a local doubt and when one asks aviation how it is to be the harbors for the local business to find, it finds itself in a local doubt simply on the same basis. Therefore, until the local doubt is resolved, often willing to establish airports into law doubtless, though there is evidence on all sides that municipal bodies are willing to do all the law allows them to do and sometimes to build the local harbor a trade-



Editor T. H. Dugan, Editor of the Los Angeles Times, is shown in a biplane flying over the mountains of California. The plane is a biplane, and the pilot is wearing a hat and goggles.

## Building Aerial Supremacy!

Goodrich has over kept pace with every development in motor transportation.

The same policy holds in the field of aviation—for Goodrich makes tires for every requirement in airplane transportation.

Two new developments in Aircraft Tires by Goodrich are the new 18x3" and 20x3" for straight side rims. These round out the line, which now contains a complete range of sizes from 18x3" to 60x14".

For smooth takeoffs and safe landings use Goodrich Airplane Tires!

THE D. F. GOODRICH RUBBER COMPANY  
Established 1833 Akron, Ohio

# Goodrich

## Aeronautical Accessories

Goodrich Ring Type Shock Absorbers

For maximum safety. Multiple strands of tough rubber compressed into a single woven casing. If one ring breaks the landing gear is protected by the other rings and only the broken ones need to be replaced.



The Silvermaster plant recently purchased by the Federal Reserve and the Federal Reserve Bank of the United States, is shown in the background. The plant is a large, modern building with a flat roof and many windows.



Captain Wilkins' Dillman (Whitcomb) plane "Whitcomb" along with it at Point Barrow, Alaska. (Reynolds Photo.)

### Captain Wilkins Safe

Capt. George H. Wilkins, commanding the Detroit News-Wilkins Arctic Expedition, from whom no word had been received since March 26, when he sent a message that he was down on the ice, 125 mi. from Point Barrow, was reported safe at Beaulieu Point, Alaska, April 20.

Captain Wilkins and Carl E. Eklund started on March 23 for an exploration flight over the unexplored Arctic region north of Alaska. The plane carried fuel sufficient for a fourteen hour flight and Captain Wilkins piloted to 600 mi. from the Point Barrow base. Algy Graham and an Eskimo guide made several flights in a scout plane from Point Barrow in search of the missing three, but found no trace of them or of the plane. Graham returned to Barrow for supplies, but expected to resume the hunt. Captain Wilkins carried a food supply sufficient for two weeks.

Beaulieu Point, where Captain Wilkins and Eklund were seen, is at the mouth of the Colville River, 125 mi. east of Point Barrow, Alaska. During the three weeks they have been missing, the three were making their way over the ice to this land, which is the only point of shelter in this great stretch of ice and snow. Details are looking up to the landing and condition of the plane.

### Samuel Untermyer Flies to Jerusalem

Samuel Untermyer, president of the Palestine Foundation, arrived in Jerusalem Apr. 2 in an Imperial Airways airplane from Paris. The trip was rough and the plane had to ditch thirty miles over the Mediterranean to avoid a sand storm.



The Detroit News-Wilkins Arctic Expedition under the leadership of Captain Wilkins. The plane is a Whitcomb (Whitcomb) plane. The plane is a Whitcomb (Whitcomb) plane.

### De Luxe Planes on London-Paris Line

The Imperial Airways, of London, Eng., expects shortly to put into service between London and Paris airplanes with built-in, turn and other features. Planes will serve each city at least daily and the line will be known as the Silver Wing Service. Each plane will carry a steward. Three-engine Armstrong Whitworth Army planes, each with a twenty passenger capacity, will be used in the new service. The Imperial Airways, it is said, in the future will have all planes for others.

### First Air Route Map

It is understood that the best airway map of the Department of Commerce is now to be published. The route covered in this first map is from Kansas City, Mo., to Mexico, D. C., by way of St. Joseph, Mo., a distance of more than 300 mi.

All preliminary drafting on the map has been completed by the Coast and Geodetic Survey of the Commerce Department. A. L. Greenwood, one of the chief experts of the Coast and Geodetic Survey, is now in Kansas City to make a flight over the route and check up on the accuracy of the new map under flight conditions. He made a flight, accompanied by Lieut. Joseph Derris, U. S. Army, starting from Robinson Field, Kansas City. As soon as the map has been carefully checked, through an aerial flight, it will be corrected, if necessary, and published by the Coast and Geodetic Survey.

All airway maps, either Air Corps or hydrographic office are now available at the Department of Commerce.

## ARE YOU REPRESENTED IN THESE COUNTRIES?



If not, you are neglecting one of the most fertile markets for the aircraft industry in the world.

There is an exceptional demand, now, in these countries for modern American aircraft of all types, also motors, parts and supplies.

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# BELLANCA



*Aviation Magazine*, in its issue of April 25, 1927, says editorially:

"THE fact that the plane was not designed especially for load carrying was it in any way a special job, makes the record flight all the more impressive from the technical standpoint. The Bellanca monoplane was designed as a commercial plane with commercial operation the primary requisite, a factor which is seldom given much thought in the development of a record-breaking machine. The plane has a high speed and its general all-round performance is far superior to that of the type of plane which generally

is expected to set up endurance records. Yet, everyone who witnessed the most of the flight was impressed with the ease with which the Bellanca plane took all and the rate of climb in spite of the heavy load of gasoline which it was carrying. Furthermore, the fact that, upon the completion of the flight, neither pilot appeared to be unduly exhausted speaks well for the control qualities of the plane and sounds a resounding note in favor of the closed cabin type of machine."

# Supremacy

and the

## World's Endurance Record

WHEN pilots Clarence D. Chamberlin and Bertrand B. Acosta landed the Wright-engined Bellanca Commercial Cabin Monoplane on Roosevelt Field, Long Island, on April 14, after remaining continuously in the air for 51 hours, 11 minutes and 20 seconds, they brought back to America one of the world's premier air records by a margin of nearly six hours; a record which, more than any other, stands for advanced design and performance.

For the airplane operator or air transport executive the emphatic message of the endurance record is that the Bellanca design has given to the world a more efficient and economical commercial plane—a plane combining with ample safety factors, an extraordinary load carrying ability, excellent maneuverability and controllability, quick takeoff, high air speed and slow landing speed—all essential factors in the conduct of profitable air transportation.

Full information upon request

### COLUMBIA AIRCRAFT CORPORATION

5104 WOOLWORTH BUILDING, NEW YORK CITY



## Aerial Photography Aids Highway Improvement Plans

*Experience in Planning for Buffalo's Growing Traffic Needs Shows Value of Aerial Surveys*

UNDER the caption, "How Aerial Maps Aid in Planning Highway Improvements," in the March issue of "The Highway Magazine," George C. Dail, county engineer, Erie County, N. Y., discusses the value of aerial photography and surveying in the laying out of main highways. Mr. Dail discusses the details of the aerial survey and map which is being made of Erie County primarily for the purpose of a general study of the Greater Stateways System and the preliminary general location of the various roads comprising the system. The survey was authorized by the Board of Supervisors and is being made under the direction of the County Engineer.

Mr. Dail says in part:

"For the purpose of an aerial survey ground controls are necessary, together with a skilled pilot and photographer. To bring photographs to scale they must be taken from a fixed height. Both the plane and the camera must be carefully aligned to this end. The photographs are taken vertically from a high altitude, with an overlap which is eliminated when they have been carefully scaled, and built up into a mosaic picture of the terrain included. Previously surveyed lines of traverse across the region may be used for control.

"The map and photography was done at an elevation of 8000 ft. and the finished map is 500 ft. to the inch. With few exceptions the control points are two miles, or less, apart from each other. Traverses of existing roads were used for the control. Most of these roads had been surveyed for existing highway improvements and the notes of these surveys were used in plotting the control. Nevertheless, it was necessary to run many miles of new traverse.

"Too much time or money, however, should not be spent on undue refinement for accuracy. This is controlled, though, by the accuracy required of the completed map. The plotting of a control map in the ordinary drafting room, to cover 170 square miles of territory on a scale of 50 ft. to the inch, is quite a labor. The sheets are large and difficult to handle and to return the work for the purpose of clearing an error is extremely easy to be time wasted. In attempting to close traverses several miles in length it is readily seen that a failure is close, when the error is less than one per cent, is for all practical purposes immaterial.

"The map was made on the basis of a variation of not to exceed one per cent between the control map and the aerial map with points on the former set over two miles apart. In other words, the aerial map was required to agree with the control map within 600 ft., scaling each way from control points two miles apart.

"For the purpose of general study and planning it is at once apparent how aerial one or even two per cent in variation of map distance becomes when the errors are not cumulative and when such error does not exceed 1/100 or even 1/15 in, in open country. Where the control points can be close together, as in street areas, this error can be reduced to 1/100 of an inch on a 600-foot block, clear thus a difference over 10 ft. . . .

"And in laying out preliminary lines is only one function of an aerial map. Its accuracy similar to that around Buffalo the ability to show a property owner where the line is located and why it is so located, is of more value than the mere location of the line. For these reasons the securing of rights of way becomes one of the most important uses of aerial maps.

"Another important use is in legal disputes involving property lines and accidents on public property. In the past however a serious accident happened near a town park and suit for damages was brought against the town board. Testimony was given, by both sides, that the accident happened at an adjacent to a certain depression. The county engineer had furnished the town with an enlarged aerial map of the locality in question. This map was called as evidence, the depression located thereon and shown to be off the property owned by the town. The plaintiff lost. . . .

"Aerial maps have and Erie County about \$100 a square mile, not including the expense. The bulk of the return on this investment is determined only by the activities of the locality mapped and the people using it."

### Cameron Made Air King Agents

Leslie Cameron, of the Cameron Aviation Company, of Toledo, Ohio, has just returned from Kansas, Ill. bringing news of a new Air-King which he has purchased. The Cameron Aviation Company has closed a franchise contract for the entire state of Ohio and will act as exclusive agent for the Air-King airplanes. Lesley Davis, chief pilot of the Cameron Aviation Company accompanied Mr. Cameron and is enthusiastic over the performance of the Air-King.

In addition to placing orders for regularly scheduled planes, the Cameron Aviation Company has ordered a new Air-King with a special 1800 engine. This particular machine has been sold by the Cameron Aviation Company.



## Thorobreds, Every One! They're Travel Airs

THE BI-PLANES, a Whirlwind and an OX-5, are "doing their stuff" at the All-America Aircraft Display at Washington this week, with Geo. A. Wies in charge. (George is New York representative of Travel Air.)

The monoplane, already a stalwart youngster of the Travel Air family, could not be present—IMPATIENT BUYERS HAVE DEPRIVED US OF EVEN OUR EXHIBITION SHIPS.

*Travel Air literature sent to agents on request.*



## TRAVEL AIR MFG. CO., Inc.

Factory and General Office  
WICHITA, KANSAS



The arrival of the Pan American Fleet at Trinidad.



### Life Insurance for Those Who Fly

Headquarters of Avianca will insist, with intent, that it is reasonable for firms to insure life insurance coverage up to high limits of indemnity. Until now, while certain insurance companies have announced themselves as prepared to cover the level of policy, etc., inquiry has revealed the fact that such coverage has only been obtainable within certain low maximum limits. Moreover, such policies have been applicable only in certain classes of firms.

New, however, through the influence of Barber & Helms, Inc. of New York City, representing the United States Life Insurance Co., it is possible for any pilot or passenger, on commercial airlines or in general service airplanes, to obtain a life policy up to a maximum indemnity of \$50,000. This maximum is about five times higher than the highest limit of indemnity heretofore available and the acquisition of this form of aviation insurance can only be regarded as one of the most important steps in the aeronautical arena at this time.

The firm of Barker & Baldwin, Inc., it will be recalled, are pressure on aviation insurance. It is, I think, therefore, not at all surprising that it should be so much more largely of the personal contacts of H. Barker himself than the general aviation insurance has been, and is possible. It was Mr. Barker, in fact, who wrote the very last aviation insurance policy, a Lloyd's policy, back in 1933, and it is his long experience, together with that of other members of the firm of Barker & Baldwin, that this latest line of aviation insurance is made possible.

Under the terms of the new U. S. Life Insurance Co. policy, any life can secure his life against all risks in the world, those at home and those at sea, when he gives up the right to the coverage to eliminate the overhead cost, in which case the premium on the policy would be reduced somewhat. In other words, on this new life policy, the extra premium due to the marine coverage could be dropped in the event that the insured gives up being insured by policy merely because an ordinary life policy. This feature is extremely important since it eliminates the possibility of those taking out special marine policies which become valuable when the time comes they return home.

### Robertson Purchases Kentucky Stock

The state of surplus accounts, recently offered for sale by the Kentucky Alkali Company, of Owensboro, Ky., was purchased by the National Alkali Corporation, and moved to St. Louis.



### Insurance for French Flyers

An insurance bill has been approved by the French Ministry of Finance which will provide insurance for all civilian workers in the Government service. The insurance normally will be paid for by the insured, but the bill covers an increase in Governmental expenses to cover this.

## Bibliography of Acoustics, 1934

This work, published by the National Advisory Committee for Aeronautics, covers the literature published from Jan. 1, to Dec. 31, 1954, and contains the work of the Smithsonian Institution issued as volume 56 of the Smithsonian Miscellaneous Collections, which covered the material published prior to June 30, 1950, and the work of the National Advisory Committee for Aeronautics as published in the *Biography of Aeronautics* for the years 1909 to 1948, 1947 to 1950, 1950, to 1952, 1952 and 1953.

As in the *Syllabus* volume and in the *Bibliography of Acronyms* for the years 1989 to 1918, 1927 to 1914, 1929 to 1921, 1922 and 1935, entries of the publications of all authors have been included in the language in which these publications originally appeared. The arrangement is in dictionary form with author and subject entry, and cross-alphabetical arrangement. Detail in the matter of subject reference has been worked in amount of the cost of presentation, but an attempt has been made to give sufficient cross-references for research in several lines.

The Bibliography of Agriculture, 1955, contains 134 pages and may be obtained direct from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 35 cents per copy.

### Obsolete Engines For Colleges

The first mass of classified aircraft engines in educational institutions for instructional purposes have been made to the University of Nebraska, Lincoln, Neb., and in the Worcester Polytechnic Institute, Worcester, Mass. This was done under the Act of Feb. 13 which provided that the Secretary of the Navy is to make such engines of which there is no other record for transportation and delivery, to provide for the use of colleges and universities for the use of mechanical engineering, aircraft, aircraft parts, instruments, or engines which had been declared obsolete by the Navy Department. It further provided that such obsolete, aircraft parts and engines were not to be used in actual flight.

[illegible]

## LEECE-NEVILLE GENERATORS



Leads-Needle Voltage Regulated Generators for aeroplanes are designed to operate at 15 volts in capacities of 15 amperes, 25 amperes and 50 amperes.

Lenco-Neville Voltage Regulated Generators insure electric current at a steady voltage up to full generator capacity, as well as protection for all instruments, lights and wiring against a sudden rise in voltage due to open circuit.

Levitt-Neville Voltage Regulated Generators are in use by United States Army Air Service, United States Navy Air Service, United States Air Mail Service and a number of private operators of aeroplanes in commercial service.

Leece-Needle Voltage Regulated Generators can also be operated with or without a storage battery.

**LEECE-NEVILLE COMPANY      Cleveland, Ohio**

## Lieutenant Callaway Sets New Speed Record

Lieut. E. W. Callaway, flying at Hampton Roads on April 23, established a new World speed record for airplanes, carrying a load of 1,500 lb. He attained an average speed of 147.500 m.p.h. for 50.1 mi. (100 km.).

The records are being forwarded to the F.A.I. for confirmation and comparison with the record made at St. Raphael, France, May 14, 1925, by Lieutenant Desnoes, when he flew at a speed of 136.500 m.p.h.

Lieutenant Callaway took off from the Naval Air Station, at Hampton Roads, at 2:30 p.m., in a new Vought-Corson (Orlik & Whitney Vought engine) and flew the triangular course of 50.1 mi. in 33 min., 17 sec. The plane went over the line in which Lieut. George B. Henshew broke the World's altitude record for airplanes with 5800 ft. load on April 25.

Lieutenant Callaway was born at Somerset, N. D., March 10, 1895, and became a pilot in the U. S. Army in 1917. He is now stationed at the Anacostia Naval Air Station and is a member of the Navy test staff there.

## New German Lightplanes

The German engineer Engelstein, of Götting, Germany, has recently constructed a small lightplane with a motorcycle engine. On trial, the engine is said to have given 520 m.h.p. based on Berlin, at 265 lb., consuming only \$1.30 worth of gasoline. (Whether this indicates about 4 gal. of gasoline, assuming the rate in the United States, or a little under 3 gal., assuming the approximate cost of gasoline elsewhere, is not clear—Ed.)

A further report says that a two-seater Henschel lightplane, also with a motorcycle engine, recently flew 721 mi. in 7 hr., 58 min. and reached an altitude of 14,500 ft. The company which manufactured this machine is now constructing a 30 hp. plane with an Anzani engine, which should sell for about \$6,000. The machine will have a speed of about 34 ft. and a length record of 17 ft.

## Dutch Trans-Atlantic Flight

A trans-Atlantic flight, under the auspices of the Royal Dutch Air Force, is being contemplated. If undertaken, the route would be from England to Canada by way of Iceland, Greenland and Vancouver.

## Chasute Aero Club

The Chasute Aero Club, of Chasute, Kan., was recently organized to advance aviation activities in that city. At present there are seven members and several more are on the application list. The club members own two planes, a Standard and a Cessna and two more planes are on the field, the owners of which may join the club. A hangar is being erected on the field, which is a quarter section, one mile west and a half a mile south of Chasute. A gasoline pump and a field marker are to be installed soon and one or two field managers will be on duty at the field at all times.

A young airplane played havoc with the planes on the field Tuesday night, April 18. The hangar framework was reached, falling on the flywheel, and damaging one wing. A Jenson was towed over the fence and landed in a telephone wire, almost demolishing the Jenson and a Standard was towed into the road, during night damage.

Student training, passenger loading and overhauling are the chief occupations of the local pilots.

## Holland Stamps on Air Mail

Pursuant to the request of the Postal Administration of the Netherlands, commencing at once, only Netherlands postage stamps will be recognized as payment of the fees required for airmail transmission by the United States Air Mail Service of letters mailed in the Netherlands.

## Sites Offered for New York Airport

As a result of a campaign started several weeks ago by the Committee on Air Landing Plans, of the New York Board of Trade and Transportation, ten offers have been submitted for sites for an airport. The leading plans offered are:

The property between Baychester Avenue and the Hudson River, north and south of East 2350 Street; a site on the Hunt's Point section of the Bronx, between East River, Long Island sound and the Bronx River, the Empire City Race Track at Yonkers, two sites of an average of 250 and 90 acres each, lying east of Garden City, L. I.

Lord Spencer, chairman of the committee, has announced that a thorough investigation of all the sites and suggestions will be made before a decision is made.



TWO "Hoffmann" Precision Roller Bearings on the shaft of the Wright "Whirlwind" Engine, carried the load of the Bellanca Plane in its record-breaking non-stop flight of 51 hours and 12 minutes.

Had he carried any other brand of roller, what is the result?

I be most costly

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quity to carry the

where the ultimate in de-

service is the one criterion—in such cases, "HOFFMANN" Load-ability, Shock-ability and Speed-ability are the safety factors employed by engineers and manufacturers in increasing numbers.

The design and construction which give the "HOFFMANN" its preeminence are fully described in Catalog 504. And the standard types, sizes and ratings are given in Catalog 915.

Both will be sent at your request.

NORMA-HOFFMANN BEARINGS CORPORATION  
STAMFORD, CONN. U.S.A.

**"HOFFMANN"**  
PRECISION  
ROLLER BEARINGS



And, where dependability is just as essential, but the loads more moderate and steady, engineers specify

**"NORMA"**  
PRECISION  
BALL BEARINGS

In both open and closed types, in the range of sizes leading up especially to the heavier duty for which "HOFFMANN" are so well adapted.

Catalog 905



Lieutenant Callaway center is on the Vought-Corson (Orlik & Whitney Vought engine) that breaking the World speed record for airplanes carrying 1,500 lbs. took 33 min. 17 sec. at 147.500 m.p.h.

### National Air Tour to Start June 21

The 1927 National Air Tour, the first to be known as the National Air Tour, is scheduled to leave from Detroit, Mich., June 21. It will be the first tour for the Ford triplane.

Although final determination as to the time of flight and route to be used has not been made at the time of going to press, it is planned by the tour committee to make the flight at about two weeks duration covering some twenty states. At each of the twenty stopping places, public demonstrations are planned with a view towards furthering public interest in air transportation and to assist the support of commercial and new interests in the establishment of adequate airports.

In addition to the extensive press and popular participation, an aviation program is contemplated and complete has been planned for each stop-over. Transportation facilities from landing fields to hotels, hotel accommodations, all food, etc., will be supplied by the Tour management and cooperating committees throughout the tour.

The tour is arranged to permit manufacturers and pilots to compete for the Edward Ford Trophy, Ford Trophy and some \$25,000 in cash prizes. Additional prizes of \$500 to each entrant completing the tour will also be awarded. The Edward Ford Trophy, donated to promote interest in commercial aviation and which is held by the winner for a period of one year until won three consecutive years, will be awarded on points. Another trophy to be awarded for the fastest elapsed time made by planes of 55 or more horsepower of motor, will be presented by the Stuart Aircraft Corporation.

Sponsored by the Detroit Air Board, Detroit Aviation Society, Detroit Aircraft Club, Detroit Board of Commerce, and the Detroit Flying Club, the National Air Tour of 1927 has the official sanction of the National Aeronautic Association and will be under the supervision of the United States Department of Commerce.

Any manufacturer or pilot interested in taking part or obtaining further information is invited to write the Tour manager, Ray Cooper, Detroit Board of Commerce, Board of Commerce Bldg., Detroit.

### New Gas Cell Fabric

For a number of years, major credit from the Navy Department, the problem of obtaining a new type of gas cell fabric has been under investigation at the Bureau of Aeronautics. During the past year this problem has shown great promise of approaching final solution. At the present time goldbeater's skin fabric is used to make the largest gas cells in service of the Reynolds type. It is made by beating goldbeater's skin (the inner of one of the intestines of the eel or mackerel fish). The fabric is made in sheets in rolls, durable, and has low permeability to the various gases, hydrogens and helium, and to the chief gases of the atmosphere. The manufacture of a set of such cells, however, is a very expensive procedure, amounting to six to twelve hundred dollars. Thus, for example, the cells of the Reynolds type required for the first engine of a half million goldbeater's skin. Furthermore, with the continued development of the Reynolds type of aircraft, the supply of goldbeater's skin is seriously limited, it will become more and more essential to replace this fabric with some other type. As the result of an extended investigation the Bureau has developed a fabric which promises to replace the goldbeater's skin fabric now in use. This new fabric is lighter in weight and of lower permeability than the goldbeater's skin fabric. The new materials are available in calibrated quantities and to the coating can be applied as a calibration film by a continuous process. The finished fabric is more uniform than the goldbeater's skin fabric and can be made at a relatively low cost. As the maximum, a completed set made of the new fabric should not cost more than one-third as much as the set of goldbeater's skin fabric. Furthermore, as the methods of manufacture are improved and streamlined, and as greater quantities of the fabric are required under the

present cost of manufacturing can be reduced materially. However, since the present high estimate of production costs there can be afforded in the manufacture of the gas cells for the two new engines proposed by Congress a saving of approximately one million dollars, or one-third of the total estimated cost of these ships.

The production of the fabric has passed the laboratory stage and samples have been made successfully on a factory scale. The manufacture of a full-size experimental gas cell for the installation at the Los Angeles is now under way.

### Record Delivery to Philadelphia Airport

Among the interesting arrivals reported by the Ludington Philadelphia Flying Service at the Philadelphia Airport was one of the three three plane formations built by the Ryan Airplane, Inc., of San Diego, California. It is the first of the type to make its appearance in the East and its arrival probably established a record for a long distance delivery of a commercial air plane. The plane was piloted by Mr. Elmer of the Pacific Air Transport who reported 25 to 18 m.p.h. actual speed time from San Diego and it is interesting to note that the plane came through the recent head-on collision where even reduced transportation has been suspended.

The plane was delivered to Charles McFadden, prominent banker of Philadelphia, who will use it exclusively for his own convenience and pleasure.

### A Second Cairo-Cape Town Flight

The first of the first Air Tour is complete and another flight from Cairo to Cape Town, similar to one made last year, when three Pater D-11 planes were used. Four Pater D-11 P planes are engaged in the present flight, the purpose of which is to investigate flying conditions through Africa.



LOS ANGELES MAKES THIRD FLIGHT OF YEAR  
The Los Angeles company in this flight of the year in April. The flight was at 10 a.m. and ended at 7 p.m. The engine recovered over Adams City, Long Beach and Los Angeles. During the week of April 10 the ship flew to Pasadena and back.

## FOR THE NATIONAL GUARD



## THE NEW CURTISS "FALCON"

A recent contract awarded by the Government will make available, this year, a quantity of Curtiss "Falcons" equipped with the Liberty motor, for use by the National Guard.

The "Falcon" has the highest performance of any two-seater military airplane in service today. Having thoroughly established its superiority by service tests extending over the past two years, it is now being purchased in large quantities as the standard service observation and attack plane of the Air Corps.

The equipment of the National Guard with the "Falcon" is in accordance with the far-sighted policy of the government in providing all branches of the service with the most modern of aircraft material.

THE CURTISS AEROPLANE

Office:  
GARDEN CITY, N. Y.



& MOTOR COMPANY, INC.

Factories:  
GARDEN CITY & BUFFALO, N. Y.

## The Close of a Great Achievement

*Conclusion of the Pan-American Flight of the Air Corps Learning Amphibians Marks Outstanding Flying Event of Year*

WITH THE arrival of the four Learning Amphibians planes, engaged in the Air Corps Pan-American Goodwill Flight, the 26, 1,000, the San Francisco, the Goodwill, the New York, the Belling Field, on May 2, this outstanding 16,000 mile flight will come to an end. Starting from Kelly Field, San Antonio, Tex., on Dec. 21, Major Hargis, commanding officer of the flight, and his companions visited some of the principal cities of Central and South America.

### Many Notable Stops

The flight was undertaken with the purpose of securing contacts from friendly flying experiences for the Air Corps personnel and also to strengthen the friendly relations already existing between the Latin American and the United States. No attempt to attain speed records was made.

The flight included 140 landings, many in places where airplanes had never before been seen. The first flight was attempted down the entire western coast of South America, followed by crossing the Andes at an altitude of 12,000 ft., was one of the noteworthy of the Pan-American tour. In this latter stage of the flight the 624 miles were covered without stop, in 3.1 hr., 43 min. On the eastern coast of South America, over 3,000 miles were covered in four days, 4,200 miles of the distance being flown in one day. The longest run-way flight of the trip, a distance of over 500 miles, was made from Natal to Pernambuco, Brazil.

Flying took place in all kinds of weather. At one time, when the question was over the Republic, it flew in dense fog-fog, through a heavy mist, and a few feet above water because of the lack of visibility. Further on, the planes were in 5,000 ft. to encounter favorable winds, directly opposite to those found near on land.

The flight has demonstrated the practicability of travel by plane in South and Central American countries and has induced considerable. Major Dumas reports the flight as rich in human interest and full of the friendliest possible meetings with the people and thousands of every country in the Central and South America. He has declared that exceedingly valuable technical experience has been gained replete with important points regarding the employment of four-engine construction, such as over the habits of the amphibians in soft water.

The various stops and landing dates on the flight are as follows: Port Isabel, Tex., Dec. 21; Tampico, Mex., Dec. 22; two planes of Vera Cruz, Mex., Dec. 27 and the remaining

three Dec. 29; Manzanillo, and Salina Cruz, Mex., Jan. 1; Guatemala City, Guatemala, Jan. 2; San Salvador, El Salvador, Jan. 13; Asopaca, Honduras, Jan. 13; two planes at Panama Field, Panama, Jan. 14 and three at Manzanillo, Nicaragua, Jan. 25; all planes at Panama Field, Jan. 25; two planes remained at Panama Field, the other three at Barranquilla, Colombia, Jan. 29; two planes at Medellin, Colombia, Jan. 29; Cartagena, Jan. 29; Panama Field, Jan. 27; Buenos Aires, Colombia, Jan. 29; Guayaquil, Ecuador, Feb. 1; Puyo, Peru, Feb. 3; Lima, Peru, Feb. 3; Puno, Peru, Feb. 6; La Paz, Feb. 7; Moyobamba and Iquitos, Peru, Feb. 24; Valparaiso, Chile, Feb. 22; Talcahuano and Valdivia, Argentine Republic, Feb. 23; Bahia Blanca, A. R., Feb. 24; Mar del Plata, A. R., Feb. 25; Buenos Aires, A. R., Feb. 24 (It was here that the beautiful collision in the air occurred which resulted in the loss of two planes and the deaths of two of the personnel); Talcahuano, A. R., Feb. 26; Valdivia, A. R., March 1; Asuncion, Paraguay, March 2; Montevideo, Uruguay, March 4; Rio Grande do Sul, Brazil, March 8; Pernambuco, Brazil, March 9; Santos and Ilheus de Jesus, Brazil, March 10; Bahia, Brazil, March 24; Porto de Pedras, Brazil, March 26; Pernambuco and Port Natal, Brazil, March 26; Para, Brazil, March 27; Caracas, French Guiana, May 28; Paramaribo and Georgetown, British Guiana, March 28; Port of Spain, Trinidad, March 28; Pinar del Rio, Venezuela, March 28; Port of Spain, Trinidad, April 4. An additional member, with the two pilots who had been relieved of their plans in the aviation at Buenos Aires joined the remaining three at Puerto Cabello, Venezuela.

### A Most Responsible Mission

In looking back over the memories of the Pan-American flight, it is impossible to be anything but impressed by the manner in which each pilot and plane carried through to express every wish for which they started on. The "Pan-American" so few moments before the entire undertaking most referred the very-best of the crew in the words of the late pilots. Nevertheless, these few days have been engaged in one of the most difficult and responsible missions of the Air Corps.

Enduring experience in the operation of service aircraft over long distances with the minimum of ground assistance accompanying experience of their own is air navigation over

(Continued on page 932)



*They used*

## AMOCO PRODUCTS

*through the whole flight*

THE Pan-American Good Will Flight was a triumph for AMOCO Products as well as for the men and airplanes.

AMOCO-GAS (Aviation Grade) and AMOCO Motor Oil were used throughout the whole flight from Kelly Field to Belling Field by way of the Argentine.

AMOCO Products were shipped to seventy points in South and Central America and the West Indies, so that the Army Aviators would find fuel and oil of the highest quality available wherever they landed.

The completion of the Pan-American Flight marks an important step in the progress of American aviation — an achievement in which AMOCO Products played an important part.

We congratulate the Army Flyers on their courage, their skill and their success. And on the good judgment which led them to use AMOCO-GAS (Aviation Grade) and AMOCO Motor Oil exclusively!



THE AMERICAN OIL COMPANY

AMERICAN PETROLEUM & TRANSPORT COMPANY  
BALTIMORE, MARYLAND



The photo captures the Air Corps Pan-American flight, which achieved by a mile in a four-engine aircraft, the longest of any in the world, which flight experience was not only a record but also a record of the Air Corps.

## Doctor Ames: Chairman of The N.A.C.A.

*Eminent Johns Hopkins Professor to Succeed the Late Charles D. Walcott  
As Chairman of National Advisory Committee for Aeronautics*

DR. JOSEPH S. AMES, of Baltimore, was on April 28, elected Chairman of the National Advisory Committee for Aeronautics to succeed the late Dr. Charles D. Walcott, who died on Feb. 9, last. Along with Doctor Walcott, Doctor Ames was appointed by President Wilson in 1915 as one of the original twelve members of the Committee and he served continuously and without compensation. He has been a member of the Executive Committee for twelve years and Chairman of the Executive Committee since 1931.

The committee was the original nucleus of the entire membership of the National Advisory Committee for Aeronautics at which the following were present: Dr. Joseph S. Ames; Dr. George K. Burgess; Dr. William F. Durand; Brig. Gen. William E. Offutt; U. S. A., Capt. E. S. Land, U.S.A.; Prof. Charles F. Mowbray; Hon. Admiral W. A. Moffett, U.S.N.; Maj. Gen. Maxon M. French, U.S.A.; Dr. David W. Taylor; and Neville Wright.

Dr. Ames had just made his report as Chairman of the Executive Committee in which he developed progress in aeronautical research and outlined plans for the future, when the question of filling the vacancy caused by Doctor Walcott's death was taken up and his election was announced.

Doctor Ames was born in New Bedford, Vermont, in 1864. He received his A. B. degree from Johns Hopkins University in 1885 and his Ph.D. degree in 1890. After studying abroad, he was engaged as Assistant Professor of Physics at Johns Hopkins University and has been Professor of Physics since 1900. He became Director of the Physics Laboratory in 1910 and was recently given the additional duty of President of the University.

Doctor Ames is one of the foremost physicists in America and so much he was elected a member of the National Academy of Sciences in 1909 for "outstanding work in physics." He served for three years as member of the Council of the Academy and was one of the first members of the National Research Council which was organized by the Academy in 1915. He was chairman of the Purviser's Section Committee of the National Research Council which visited France and England in May and June of 1917 to study the organization and development of scientific activities in connection with war. He is at present serving also as a member of the Executive Board of the National Research Council and is chairman of its Division of Physical Sciences. He is a member of the Publishing Board of the Research Council for Physics, Chemistry, and Mathematics, a member of the American Physical Society; a member of the American Geophysical Union, a member of the American Section of the International Union of Scientific Esports, and a member of other local and foreign scientific societies. He is the author of a number of articles and books relating to physics, electricity, and mathematics.

For the past eight years he has been Chairman of the Committee on Aerodynamics of the National Advisory Committee for Aeronautics and in this capacity has directed the preparation of research programs for the air services of the Army and Navy, the Langley Memorial Aeronautical Laboratory, and the Bureau of Standards, and has effected a practical coordination of effort among the governmental and private agencies concerned with the scientific study of various aspects of the fundamental problems of flight.

## The Close of a Great Achievement

*(Continued from page 930)*

both land and water; proving the unsurpassed qualities of what is with little doubt one of the most outstanding airplane designs ever produced, and, last but by no means least, helping further the direct, high altitude missions with which the United States and the South American Republics regard each other, Major Douglas and his companions: Capt. Arthur R. McDevitt, Capt. Leo C. Wilson, the late Capt. Clinton F. Webb, the late Lieut. W. Borden, Lieut. Homer G. Whiteland, Lieut. Charles M. Robinson, Ensign Mar. R. French, Lieut. Bernard S. Thompson and Lieut. Leonard D. Wolfstetter, here brought to a successful close one of the greatest flights in the history of modern aeronautics.

## Change Chicago-Minneapolis Schedule

The Second Assistant Postmaster General, W. Irving Oliver, has just announced a change in the flying schedule over the air mail connect route between Chicago and Minneapolis, Minn. The change will result in a later closing hour of mail packages made up at the Tech. Office, Minneapolis and St. Paul effective April 15, 1937.

Leave Chicago 5:50 a. m., leave Minneapolis 6:50 a. m., leave St. Paul 7:50 a. m., leave Chicago 8:50 a. m., leave Minneapolis 9:50 a. m., leave St. Paul 10:50 a. m.

Leave Minneapolis 12:00 p. m., leave St. Paul 2:45 p. m., leave Chicago 5:50 p. m.

Passenger flying except Sunday and Monday weekdays; daily except Saturday and Sunday outbound.

## The Lufthansa Gained During 1936

The flying operations of the German air transport company, Lufthansa, for 1936, show an increase of twenty-four per cent in mileage flown, over 1935. In the latter year the company's planes flew 3,975,719 miles, while in 1936 they covered 5,216,113 miles. However, during the first quarter of 1936, operations of this company were suspended so that the period covered is for only nine months, against twelve months in 1935. July and August were the heaviest months, the distances flown during the former reaching 921,486 miles and during the latter slightly more than this figure.

Lufthansa reports an increase of 99.3 per cent in passenger traffic, about 115 per cent in freight and baggage and 88.6 per cent in postal traffic over 1935. Attention has been called to the fact that the night route from Berlin to Koenigsberg had previously heavy postage privileges, a total of 1,485 lb. of mail being transported over the night route from May 1 to Sept. 30. The regularity of performance is given as 99%.

On Oct. 15 the Lufthansa began regular Winter schedules, which reduced the operations by 39.9 per cent. The Winter schedule calls for service to ten foreign points, as compared with fifteen on the Summer schedule, and twenty-five domestic points, against thirty-seven covered during the Summer season.

## Daily Service Between Pittsburgh & Cleveland

The frequency of service on C. A. M. No. 81, Cleveland, Ohio, via Youngstown, to Pittsburgh and Philadelphia, Pa., effective April 21, 1937, has been changed to daily, instead of daily, except Sunday.

## Again Pennzoil helps set a new world mark



Photograph from Roosevelt Field, Long Island, N. Y., shows Pennzoil being put in motor pistons to record breaking flight.

*"It's the best oil I ever saw coming out of a plane after a long flight"* C. M. BELLANCE,  
*designer of record making plane.*

ACOSTA and Chamberlin trusted to Pennzoil—100% supreme Pennsylvania quality—in the record-smashing endurance flight of 51 hours, 11 minutes, 20 seconds that ended April 15 at Roosevelt Field.

4080 miles with a motor that never missed a beat! 4080 miles with only 4 and thirty-one hundredths gallons of Pennzoil consumed.

Pennzoil also lubricated the plane of Lieutenant Kelly and MacReady, who held the previous American record for sustained flight.

It made possible many other record performances in the air. There is no better oil than Pennzoil. There can be no better oil than Pennzoil.

THE PENNZOIL COMPANY  
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Foreign Distributors of Pennzoil, a PAGO Product



The Vought Corsair on a mission (Front & Whitney View)

## The Vought Corsair Naval Airplane

*A Two-Place Convertible Observation Fighter  
with Single Seater Characteristics and Performance*

**T**HE VOUGHT Corsair (Navy designation Model O2C-1), is a high performance two-place observation-fighter, of the convertible type using interchangeable wheel-type or float-type landing gear. The plane will be used as replacement for the present Vought O2A, not accomplishing varied missions for the U. S. Navy.

The Corsair is a tractor biplane, powered with the Pratt & Whitney Wasp 480 hp radial air-cooled engine. It was designed by the Vought engineering organization in co-operation with the Bureau of Aeronautics, and is the first plane built to meet the latest requirements of the U. S. Naval Air Service for two-place observation and reconnaissance machines.

Some features of the versatility of the Corsair is readily obtained from mention of its wide range of service capabilities, including regular high-speed reconnaissance work at both land and seaplane, observation, two-seater fighting and general cross-country work, in which services it may be reclassified as either a landplane or as a seaplane from the most intricate and hazardous, and is further equipped to take off from land or the ocean's surface.

The first test of the Corsair were made at Midway Field on November 2, 1935, and since that time the plane has been put through most exhaustive tests by the Navy Department's official Test Board, first as a landplane, then as a seaplane, and then equipped. In these official tests, with full load and with equipment and armament in place, the Corsair showed

characteristics and performance comparable to service single-seaters, although it is of greater gross flying weight and carries a much larger useful load.

The Navy Department has satisfied prediction of the actual performance data on the Corsair, but the top speed may be used to substantiate record that of present two-place service types, and to approach that of service single-seater pursuit types. The demonstrated low speed was much lower than specified requirements.

The official full load climb is two minutes exceeds that of present standard single-seater pursuit types, and equals that of the newest experimental single-seater fighters. The speed range, the nature of high to low speed, is particularly noteworthy, and as the order of 240, obtained under official full load test conditions.

Perhaps the most interesting phase of the Corsair's performance is its actual ability to carry and out-maneuver present service single-seater and two-place types at high altitude levels. It will not fall out of tight maneuvers at service ceiling, and its service ceiling, as a seaplane, is well in excess of that of any single-seater fighter in landplanes.

The performance of the Corsair is all the more interesting when the limitations which are imposed by use of seaplanes should the Navy's criteria are understood. Such a plane must exceed certain definite overall dimensions and gross flight weight; it must have an extremely low, safe, minimum flying speed to take care of adverse conditions of choppy



## HAMILTON METALPLANE

Designed to meet the demand for an efficient commercial cabin plane combining minimum maintenance with maximum usefulness over a period of years regardless of climate—assured by the use of duralumin construction throughout and powered by the Wright Whirlwind engine — especially adapted to South American requirements.

## HAMILTON METALPLANE COMPANY

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## LIBERTY MOTORS

LARGE QUANTITIES

SMALL QUANTITIES

## LIBERTY PARTS

ENORMOUS SUPPLY

RAPID DELIVERY

## THE VIMALERT COMPANY, Ltd.

807 Garfield Avenue

Jersey City, N. J., U. S. A.



Warning by the Wing outline of the Vought Corsair.

maneuvering, and meet every the maximum possible load with the highest possible performance. Also quick assembly and disassembly with great convenience from land to seaplane in necessary, revealing compactness and simplicity in the entire structure. Reliability and strength are essential since the planes are exposed to all conditions of weather and sea.

The biplane wing outline is made up of a special Vought thick aerol section for the upper wing, and a double cambered section for the lower wing. The entire outline forward stands with camberback in the upper wing. This new arrangement gives, at all flying speeds, wanted stability when combined with a judicious arrangement of the tail surfaces, and functions as exceptionally steady gun platform resulting in much greater accuracy of fire than both fixed and free guns.

#### Ease of Control

While the Corsair is extremely stable in flight, the control is particularly easy and the plane flies and maneuvers at the touch of a finger. It opens very rapidly and easily when put into a turn, yet it will not "stall-out," nor has it any "unconformable" tendency.

In a properly designed airplane of this type, the use of Finesse or Panther type ailerons is often proven and very lateral control was definitely shown by this new Vought two seater to be neither necessary nor desirable.

The Wing Arrangement and the disposition of the cockpit are naturally good vision, perhaps the best observation vision for all purposes and with maximum area of fire for the two men. Remarkably good forward and land fire vision is possible from both cockpits, in that, maneuverability and "snootiness" are greatly facilitated and accuracy is observed.

was assumed. The pilot can actually see the landing gear wheels and axle. If additional vision is desired for dark landings, however, the pilot's seat is provided with an automatic height adjusting device, making it possible instantly to raise the seat in the air when coming in for a landing.

The wings are of standard Vought construction, built up with spruce beams (except in center section where steel beams are used), and ribs of plywood and spruce with Warren-truss stiffeners. The wing panels are fabric covered, and finished with Perry-Luxon painted top.

The tail surfaces are of simple one piece positive control at all speeds, even below stalling. The tail surfaces are of welded steel tube construction, fabric covered like the wing panels, with painted top finish. The horizontal stabilizer is adjustable in flight by a convenient hand wheel control in the pilot's cockpit.

#### The Cockpits

The comfort of the crew has been given special attention. Both cockpits are exceptionally long and roomy, offering unusual leg-room and comfort for both seamen. Cockpits are windproof and fitted with adjustable, non-detectable glass wind shields. Ingress and egress from both cockpits is remarkably easy, even when winging a parasite.

In addition to the adjustable seat noted above, the rubber bar in the pilot's cockpit is also adjustable for the comfort and accommodation of different pilots. The rear seat may be folded out of the



THE CORSAIR NOISE. The fan blades carry not one pebble of the Pratt & Whitney Wasp engine, as well as the arrangement of landing mechanisms is clearly shown.

# Recognition

DEPARTMENT OF COMMERCE  
Joins the distinguished list of BUHL "AIRSTER" owners

HIGH  
Performance  
and  
Factors of Safety



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"All around excellence prompted their discriminating selection"

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MARYSVILLE, MICHIGAN

Form 202

UNITED STATES OF AMERICA  
DEPARTMENT OF COMMERCE  
BUREAU OF AERONAUTICS

Official Use  
274

## Approved Type Certificate

This certificate No. 1011 Aircraft Register  
Marysville, Mich.

is issued to the holder named by law in the production of airplane  
manufactured in compliance of an exact delivery of type, structure,  
materials, assembly, and workmanship with the authorized specifications,  
drawings and designs on file in the office of the Secretary of  
Commerce, Department of which an aircraft certificate was purchased.

The type of airplane for which this certificate is issued is known

as \_\_\_\_\_ 2-4, 2-seater \_\_\_\_\_

Dated \_\_\_\_\_ MARYSVILLE, OH, 1927 \_\_\_\_\_

All applicant papers bear the seal of  
the Department of Commerce,



*W. P. M. Lusk*  
Assistant Secretary of Commerce

Official  
approved type  
number  
one



Engine and propeller of the Vought Condor showing the three-bladed propeller, mounted on the Vought, with its three-bladed propeller.

and with the removable rear stack and arrangement of controls, gives an unobstructed passenger's cockpit for the operation of the free pass. The fuselage side housing forms compartments on both sides of the rear cockpit for the convenient location of operating and control equipment, leaving the cockpit clear from projections which might foul a pilot's feet. This feature is not possible, of course, in biplane fuselages.

The fuselage is of the tandem cockpit arrangement, extensively streamlined to reduce resistance. The fuselage frame

is fabricated of chrome-nickel steel tubing, welded together, with proper "fillet-through" strengthening built into it at all important details. Aluminum covering is used on the fuselage from the rear cockpit forward, and fabric covering over the forward frame off. Provision has been made for some extent of engine cooling by means of suitable ducting in the engine cooling. Ample access doors are provided throughout the fuselage to permit easy maintenance of operating parts, and whole units of the engine are quickly detachable for overhaul operations. Features which do not require any tool or key being provided.

Ample space is provided behind the rear cockpit for storage of last ship, life raft, etc. Storage for baggage is provided under the seat in the rear cockpit.

The Pratt & Whitney Wasp engine is mounted on a very simple engine mount built up of welded steel tubes and a pressure ring plate. All tube ends are reinforced and braced, and the mounting is designed with all welds in close. The simple construction ensures reliability in service, and the mount is quickly detachable by the removal of only four taper attachment bolts.

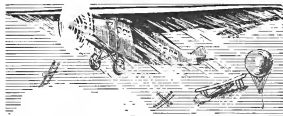
The propeller used in this latest Vought model is of the two-bladed all-metal type and was manufactured for the Navy Department by the Standard Steel Propeller Company of Pittsburgh, Pa.

The fuel tanks are of the fuselage tank type, fitting into the sides of the fuselage frame, but in the case of the Condor both tanks are duplicated and intercommunicable—an important advantage when considering spare part problems. The tanks are of unusually large capacity which, with the economy of the Wasp engine, gives the Condor a large fuel range and makes it adaptable for long cross-country flights as well as long-distance reconnaissance work at sea. The oil tank is mounted behind the engine compartment fire wall. All tanks are fitted with large diameter filler caps with ground filler caps, making it possible to refuel the Condor very quickly. The fuel and oil system can be completely drained, as suitable drain valves and plugs are located at the lowest points in the respective systems.

The Condor wheel-type landing gear is of the conventional type with shock-absorbing units incorporated in the front legs. An oil shock absorber is a standard in control wheel of the air cushioning device. Over-size 32 x 6 in. wheels and tires are used and the wheels are enclosed in spun metal



The Vought Condor as a land plane (Pratt & Whitney Wasp engine)



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## Vought Planes Added To Coast Guard Service

*Vought Type UO-4 Well Suited to Coast Guard Service. Planes Equipped with Guns and Radio*

LIVELY PREPARATIONS are reported at the various U. S. Coast Guard bases along the Atlantic coast for the annual Spring maneuvers against Run Run.

The recently acquired Vought Model UO-4 seaplanes will play a very important part in this drive. These planes, designed and built by the Chance Vought Corporation, were especially designed and equipped for the special type of work, and were among the ordered aircraft purchased directly by the U. S. Coast Guard under its own direct Air Service appropriation.

Several years ago, in a try-out to ascertain the possibilities of off-shore airplane patrol against run-runners and smugglers, the Coast Guard borrowed some standard Vought D9 seaplanes from the Navy Department. These borrowed Voughts have been in continuous operation for two years, and the results obtained, coupled with the splendid reliability and operating record made by the planes, convinced the Treasury Department officials of the economy and economy of development a seaplane air force within the Coast Guard as "error" and as the latest intelligence service, for its surface craft patrol.

### Planes Especially Equipped

These special Vought Coast Guard planes incorporate many novel features which are particularly valuable in their difficult service. These Voughts have extra large fuel and oil tanks, providing a 35 per cent greater volume than in the planes previously employed for this work. Economy engine gear, run air fitted, and the Coast Guard has installed a special long-range radio unit and housing set to maintain contact with its surface patrol craft and coastal stations when the planes are many miles at sea on observation missions. The engine is a Wright Whirlwind J-5, 220 hp.

A considerable improvement in performance has been attained by the use of the new Navy N-9 wing section. The seaplanes have been equipped with two-seater fighter fighters of safety, instead of the lower hangers usually specified for observation seaplanes.

Many changes and modifications in arrangement and accessories are in evidence, the latter to adapt the planes to the general needs of the Coast Guard. Unlike those the usual high standards of workmanship and finish which has always made Voughts stand out in any company. The designers

are beautifully trained, thinking rationally clean lines. The new wing outline has many changes tending to increase the speed and range of the planes.

The external finish is a light cream-yellow enamel and painted dope, with black striping and tape, which, with the Coast Guard identification and markings in black letters, makes a very striking color combination. This color scheme renders the planes easily distinguishable at sea and differentiates them from regular Naval seaplanes.

The seaplane problem has been simplified and complicated airworthiness and extra strength have been provided for the seaplanes so that the Coast Guard plane equipment must be subjected by the use of standard Vought Navy type side rail fast gear. This water landing gear consists of a very strong single control float, supporting the airplane by struts, instead of tubular steel struts and braced wires, and a pair of steel mounted outboard floats, one under each lower wing tip. This seaplane landing gear had been given extensive service tests in the 1925 and 1926 operation of the Vought planes by the Coast Guard, and it had very conclusively proved its ability to withstand all manner of service stress, coupled with the ability to take off, land, and take off, together with many other service planes. Its unaltered water landing capability and the high degree of reliability actually proved in numerous patrol service by Vought planes, were determining factors in the decision of the Coast Guard to include in its fleet aircraft under its own Air Service appropriation, for these special type Vought UO-4s.

The use of Vought planes in the U. S. Coast Guard adds but another difficult phase to the diversified services now being accomplished so successfully by these sturdy, standard seaplanes, the reliability and versatility of which are too well known to require comment.

### The Rome-Munich Air Service

An service between Rome, Milan, Vienna and Munich has been planned and this project is now being negotiated. It is expected that definite arrangements will be made soon and that the Italian Government will be requested to grant a concession for the operation of the service. It is expected that the Anglo Lloyd Italian is considering the project and the concession for the route.



The Coast Guard Vought UO-4 seaplane is included in the fleet and used in the Coast Guard patrol against smugglers and run-runners. The machine is a Vought UO-4 with Wright Whirlwind J-5 engine.



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By Special Arrangement with the Air Service and Transportation Divisions,  
Bureau of Foreign and Domestic Commerce

#### Cherbourg as Air Station

Signatures for the use of Cherbourg, France, as a coast station for shipping between the British and French authorities. It is the intention of Imperial Airways, Ltd., to extend the air service between Southampton and Cherbourg, so as to link up with the sailing of the trans-Atlantic liners. The usual weekly service operated between Southampton and Cherbourg has been maintained constantly through the winter, and it is proposed to make the service less costly the summer. Trips to Cherbourg are made twice weekly from the Weymouth Airport, with special permission of the French authorities, in most of summer or in winter, such as a passenger arriving in Cherbourg. The new route, which officially maintained by the Government of the respective countries, will be of immense value to travelers between London and New York. It will save a full day, both on the outward and return journey, and the fare will be a moderate one.

#### French-Argentine-European Mail Service

A contract was recently signed between the Argentine Director General of Mail and Telegraphs and the Compagnie de Transportes Aeriens Latécoere, a French company, providing for the establishment of an air mail service between Toulouse, France and Buenos Aires. Under the contract the service will be inaugurated by Sept. 1 of the present year. The route to be served is from Toulouse to Cordoba, Rosario, by airplane, 1,135 mi. scheduled to be served in 10 hrs.; Cordoba to St. Louis del Sur, by plane, 1,375 mi. in a day and a half; Saint Louis to Cape Verde Island, by plane, 414 mi. in 5½ hrs.; Cape Verde Island to Pernambuco del Nordeste Island, by special fast steamer, 1,250 mi. in three days; Pernambuco Island to Pernambuco, Brazil, by plane, 402 mi. in 5 hrs.; Pernambuco to Rio de Janeiro, by plane, 1,200 mi. in 14 hrs.; Rio de Janeiro to Buenos Aires, by plane, 1,382 mi. in 15 hrs. Thus a through service of 7½ days over a total distance of 5,861 mi. is provided. It is claimed that more rapid service will later be given with the inauguration of night flying and the substitution of planes for steamers in the Cape Verde to Pernambuco Island stage. A weekly service such way is stipulated in the contract.

#### Chile Inaugurates Air Mail Service

Chile's first air mail service was inaugurated recently for the transportation of foreign postal pieces between the port of Valparaiso and Santiago.

The intention is said to be of great importance to business in the Chilean capital, for under present conditions all correspondence from that port for foreign countries had to be mailed the day preceding the mail steamer's departure for Valparaiso. Under the new system, the State postal office will not close the day until the morning of the day on which the steamer sails. A further advantage is that mail bags should be distributed in this city a few hours after the steamer from the ocean mail service. The news of the beginning of the new service has been received in Chile with the warmest public approval.

#### Cross Alps Seventy-Five Times

On the Ticino-Turin air line a technical regularity has been kept of 95 per cent of the last four months of 1936. Two of the pilots, Propelli and Biondini, have crossed the Alps seventy-five times.

#### Civil Aviation Progresses in Canada

Civil aviation in Canada registered a marked increase in 1936, as compared with previous years. Statistics were taken from reports submitted by all aviation organizations in Canada, except the Royal Canadian Air Force and a few smaller ones by individuals.

In 1936, 4,556 flights were made, as against 3,171 in the preceding year. Flying hours increased from 4,063 in 1935 to 5,686 last year, an increase of about 32 per cent. In 1936, 9,436 passengers were carried over 551,715 miles, as compared with 4,467 passengers and 464,948 miles the year before. In 1936 freight traffic amounted to 125,721 lb., as against 582,235 lb. the previous year. These figures include operations carried by the Provincial Air Service in Northern Ontario. Annual survey reports are planned for 1937, on 1500 mi. and 3,147 in the previous year. An airline produced 100,000,000 miles in Northern Ontario. Twelve type shipping by air, including the one over 12,285 sq. mi.

#### French-Argentine Air Line

In an interview given at Toulouse recently officials of the French aviation company, Latécoere, stated that they had signed a ten year contract with the director of Communications of the Argentine Republic for extension of its aerial transport line with weekly service between Europe and Argentina. Under the terms of the contract the service must begin by September 1, 1937. It is expected in France that the first flight will be made very by July.

The Latécoere company officials made the following statement: "Beginning Sept. 1, 1937, our line will be in operation between Toulouse and Buenos Aires, making the one-way trip in about nine and a half days. Because of the lack of protected airplanes, the line will not be entirely aerial at the start, and the crossing of the Atlantic to the island of St. Vincent (7,600 miles) will be made by fast steamer."

"The MGS a complete aerial service will bring Buenos Aires to within four days of Paris. The technical preparation of the line is entirely completed. The route to be followed will be: Toulouse-Cordoba-Santa-Cruz-Cape Verde-Alcorta-Buenos Aires."

The Compagnie de Transportes Aeriens Latécoere is reported to have a subsidy from the French Government of \$45,000 for its total operations the first year on several lines which it plans to establish. No subsidy had been requested from the Argentine Government.

The French company claims to have only the use in this service 200 airplanes, forty airplanes, nine 1,000-hp. planes, with a speed of 50 knots per hour, and 108 triplane gliders. It is assumed that this refers to the entire organization of the company which is operating, or planning to operate, elsewhere as well.

#### Australian Air Service

More than 4,600 passengers were carried by the Australian commercial air services during the last fiscal year ended June 30 without a single fatality. The total mileage flown during the year 1935-36 was 463,600 which was an increase of about 55,000 miles over the previous year.

In New South Wales airplanes carried 483 passengers; in Victoria 3,508; in Queensland, 965; and in South Australia, 367. In each of the States named, except Queensland, there were accidents, involving damage to the planes. More than 570,000 letters were carried in 1935-36 by Australian airplanes and 65,000 lb. of freight.

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## Side Slips

By ROBERT E. GORDON

If we may be pardoned for commenting on news as old as that pertaining to the unfortunate accident to Commander De Pined's flying boat, we would like to say that it must have been a sad blow to one of our favorite writers, Mr. Jay E. House, whose daily column of comment and humor appears in numerous metropolitan newspapers. It is the sad legacy of this gentleman, exposed and exposed upon in his writings, speeches and conversation, that no reporter was ever responsible for starting a fire, in spite of the mounding of such responsibility in his newspaper, fire-wreath and anti-bombardier activities. Mr. House's whole argument is based on the fact that in the thirty years of his newspaper career he has been driving motorcars, cigars and cigarettes in motor-boats full of newspaper editors and city warts, and has never started a fire. In the De Pined mishap, a boy threw a match in a hole, which should be the safest place in the world to throw a match, and landed up a headless flaming dollar cigarette. It will be interesting to see how Mr. House accounts for this accident when his agents return to the defense of the cigarette.

We fear that The Integrated Aviator has become a little out of touch since he has been on several trips away from our wonderful city. Mr. R. H. J. writes to us to say that he saw him at a Detroit flying field delivering an address to some of the open-mouthed citizens of that locality. In the part of his speech overlooked by Mr. R. H. J., The Integrated Aviator was

telling them he had the sturdiest hand, the sharpest eye and strongest nerves in town as far as accidents, and that he always sharpened his razor blades with the tips of the metal propeller on his plane, while the mechanics were warming up the engine. He also informed his audience that the Canteen-Stool props were best for razor blades, but that Standard Steel props were ideal for finger nail clipping.

When The Integrated Aviator said his next recent visit to our office he called our attention to the fact that there would shortly be a great shortage of hands, meteorological observations, and aerodynamic bodies, for which airplanes and airplanes could be used. He pointed out, in great detail, that usually all known means had been used up, and stated that he was planning an expedition shortly to areas of new material. He said that about the only hole left for the manufacturers was the Long Island Sound, which was not very desirable, as it had poor draft characteristics and proved beyond belief as landing.

Most of the people with whom we have discussed the proposed Trans-Atlantic Pipeline, one of the schemes that the various fair societies and a newspaper with him, with a good plain, plenty of goodness and all of the circumstances that Paris has to offer, he couldn't possibly make his destination.

Mr. G. A. P. expects an unusual accident to himself at one of the eastern flying fields, which shows that a high factor of safety is not always desirable. As the Editor's commentary department—the one organ and well known clerk, he purchased a gun and, after discussing the no plane which came with it, proceeded to cut it. It wasn't until he reached the last quarter section that he discovered that the per-baker had also provided a waterproof plate with his product.



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standing in the industry if they are not already known to you.

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2540DH, 2540DI, 2540DJ, 2540DK, 2540DL, 2540DM, 2540DN, 2540DO, 2540DP, 2540DQ, 2540DR, 2540DS, 2540DT, 2540DU, 2540DV, 2540DW, 2540DX, 2540DY, 2540DZ, 2540EA, 2540EB, 2540EC, 2540ED, 2540EE, 2540EF, 2540EG, 2540EH, 2540EI, 2540EJ, 2540EK, 2540EL, 2540EM, 2540EN, 2540EO, 2540EP, 2540EQ, 2540ER, 2540ES, 2540ET, 2540EU, 2540EV, 2540EW, 2540EX, 2540EY, 2540EZ, 2540FA, 2540FB, 2540FC, 2540FD, 2540FE, 2540FF, 2540FG, 2540FH, 2540FI, 2540FJ, 2540FK, 2540FL, 2540FM, 2540FN, 2540FO, 2540FP, 2540FQ, 2540FR, 2540FS, 2540FT, 2540FU, 2540FV, 2540FW, 2540FX, 2540FY, 2540FZ, 2540GA, 2540GB, 2540GC, 2540GD, 2540GE, 2540GF, 2540GG, 2540GH, 2540GI, 2540GJ, 2540GK, 2540GL, 2540GM, 2540GN, 2540GO, 2540GP, 2540GQ, 2540GR, 2540GS, 2540GT, 2540GU, 2540GV, 2540GW, 2540GX, 2540GY, 2540GZ, 2540HA, 2540HB, 2540HC, 2540HD, 2540HE, 2540HF, 2540HG, 2540HH, 2540HI, 2540HJ, 2540HK, 2540HL, 2540HM, 2540HN, 2540HO, 2540HP, 2540HQ, 2540HR, 2540HS, 2540HT, 2540HU, 2540HV, 2540HW, 2540HX, 2540HY, 2540HZ, 2540IA, 2540IB, 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2540MY, 2540MZ, 2540NA, 2540NB, 2540NC, 2540ND, 2540NE, 2540NF, 2540NG, 2540NH, 2540NI, 2540NJ, 2540NK, 2540NL, 2540NM, 2540NN, 2540NO, 2540NP, 2540NQ, 2540NR, 2540NS, 2540NT, 2540NU, 2540NV, 2540NW, 2540NX, 2540NY, 2540NZ, 2540OA, 2540OB, 2540OC, 2540OD, 2540OE, 2540OF, 2540OG, 2540OH, 2540OI, 2540OJ, 2540OK, 2540OL, 2540OM, 2540ON, 2540OO, 2540OP, 2540OQ, 2540OR, 2540OS, 2540OT, 2540OU, 2540OV, 2540OW, 2540OX, 2540OY, 2540OZ, 2540PA, 2540PB, 2540PC, 2540PD, 2540PE, 2540PF, 2540PG, 2540PH, 2540PI, 2540PJ, 2540PK, 2540PL, 2540PM, 2540PN, 2540PO, 2540PP, 2540PQ, 2540PR, 2540PS, 2540PT, 2540PU, 2540PV, 2540PW, 2540PX, 2540PY, 2540PZ, 2540QA, 2540QB, 2540QC, 2540QD, 2540QE, 2540QF, 2540QG, 2540QH, 2540QI, 2540QJ, 2540QK, 2540QL, 2540QM, 2540QN, 2540QO, 2540QP, 2540QQ, 2540QR, 2540QS, 2540QT, 2540QU, 2540QV, 2540QW, 2540QX, 2540QY, 2540QZ, 2540RA, 2540RB, 2540RC, 2540RD, 2540RE, 2540RF, 2540RG, 2540RH, 2540RI, 2540RJ, 2540RK, 2540RL, 2540RM, 2540RN, 2540RO, 2540RP, 2540RQ, 2540RR, 2540RS, 2540RT, 2540RU, 2540RV, 2540RW, 2540RX, 2540RY, 2540RZ, 2540SA, 2540SB, 2540SC, 2540SD, 2540SE, 2540SF, 2540SG, 2540SH, 2540SI, 2540SJ, 2540SK, 2540SL, 2540SM, 2540SN, 2540SO, 2540SP, 2540SQ, 2540SR, 2540SS, 2540ST, 2540SU, 2540SV, 2540SW, 2540SX, 2540SY, 2540SZ, 2540TA, 2540TB, 2540TC, 2540TD, 2540TE, 2540TF, 2540TG, 2540TH, 2540TI, 2540TJ, 2540TK, 2540TL, 2540TM, 2540TN, 2540TO, 2540TP, 2540TQ, 2540TR, 2540TS, 2540TT, 2540TU, 2540TV, 2540TW, 2540TX, 2540TY, 2540TZ, 2540UA, 2540UB, 2540UC, 2540UD, 2540UE, 2540UF, 2540UG, 2540UH, 2540UI, 2540UJ, 2540UK, 2540UL, 2540UM, 2540UN, 2540UO, 2540UP, 2540UQ, 2540UR, 2540US, 2540UT, 2540UU, 2540UV, 2540UW, 2540UX, 2540UY, 2540UZ, 2540VA, 2540VB, 2540VC, 2540VD, 2540VE, 2540VF, 2540VG, 2540VH, 2540VI, 2540VJ, 2540VK, 2540VL, 2540VM, 2540VN, 2540VO, 2540VP, 2540VQ, 2540VR, 2540VS, 2540VT, 2540VU, 2540VV, 2540VW, 2540VX, 2540VY, 2540VZ, 2540WA, 2540WB, 2540WC, 2540WD, 2540WE, 2540WF, 2540WG, 2540WH, 2540WI, 2540WJ, 2540WK, 2540WL, 2540WM, 2540WN, 2540WO, 2540WP, 2540WQ, 2540WR, 2540WS, 2540WT, 2540WU, 2540WV, 2540WW, 2540WX, 2540WY, 2540WZ, 2540XA, 2540XB, 2540XC, 2540XD, 2540XE, 2540XF, 2540XG, 2540XH, 2540XI, 2540XJ, 2540XK, 2540XL, 2540XM, 2540XN, 2540XO, 2540XP, 2540XQ, 2540XR, 2540XS, 2540XT, 2540XU, 2540XV, 2540XW, 2540XX, 2540XY, 2540XZ, 2540YA, 2540YB, 2540YC, 2540YD, 2540YE, 2540YF, 2540YG, 2540YH, 2540YI, 2540YJ, 2540YK, 2540YL, 2540YM, 2540YN, 2540YO, 2540YP, 2540YQ, 2540YR, 2540YS, 2540YT, 2540YU, 2540YV, 2540YW, 2540YX, 2540YY, 2540YZ, 2540ZA, 2540ZB, 2540ZC, 2540ZD, 2540ZE, 2540ZF, 2540ZG, 2540ZH, 2540ZI, 2540ZJ, 2540ZK, 2540ZL, 2540ZM, 2540ZN, 2540ZO, 2540ZP, 2540ZQ, 2540ZR, 2540ZS, 2540ZT, 2540ZU, 2540ZV, 2540ZW, 2540ZX, 2540ZY, 2540ZZ.

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It is a wheel mounted 2540 or 2540B, 2540C, 2540D, 2540E, 2540F, 2540G, 2540H, 2540I, 2540J, 2540K, 2540L, 2540M, 2540N

# AIRPORTS AND AIRWAYS

## Bettis Field, Pa.

By Dave Fox Lamb

Schedule of everything from hangars to grass seed, an-  
nouncements, pamphlets, 20 signs, lights, repairs, photo-  
graphs, models, concession booths, Orison, Janssen, radios and  
Spring drafted into Bettis Field during the last ten days with  
no preliminary warning.

Among the newcomers was "Elap" Slater, an old-time  
pilot, now famous as a hot dog expert and noted sausage  
strut, who secured the restaurant concession and is now  
serving a real "hot" dog, with mustard and meat rooms in-  
cluded. "Elap" leaves the flying game to sell that it is  
going to be a difficult matter to obtain credit.

All preparations have been made to handle the air mail  
planes. The runways are sealed, rolled and the hangars are  
completed, including a set of offices and storerooms. The  
State is expected to attend the inauguration services of the  
air mail with a three-engine "Tin Goose." This type may  
later carry mail or passengers for hire.

On the evening of April 31, a banquet was given at the  
Penn-Moran Hotel to celebrate the opening of the Cleveland-  
Youngstown-Pittsburgh Air Mail. The guests were addressed  
by William P. MacCready, Jr., Assistant Secretary of Commerce  
for Aeronautics; Irving W. Hays, Second Assistant  
Postmaster General; Congressman Clyde Killy, and others.

The personnel of the Cleveland-Youngstown-Pittsburgh Air  
Mail is as follows: Clifford Bell, of McClelland, contractor;

Arthur J. Lynch, of Youngstown, traffic manager; Merle Mel-  
trap, of Pittsburgh, chief of operations and pilot; Dewey  
Steele, of Pittsburgh, pilot and chief mechanic; Kenneth  
"Gator," of Pittsburgh, reserve pilot; William Livingston,  
formerly of McCook Field, chief mechanic at Pittsburgh. Re-  
serve planes will be kept at all stops on the route.

Le R. Tenner, piloting a Boeing touring plane from Wash-  
ington, D. C. to Seattle, Wash., stopped in for the night  
to make minor engine repairs, and proceeded to Cleveland the  
following morning. A helicopter portable hangar, 75 by  
40 ft. is being erected to house the planes that are now in  
use. Temporary hangars, pending the completion of the large  
steel hangar. The east and west runway is now in use, hav-  
ing been closed for several days to permit the laying of a  
large gas main.

Local E. C. Brown, from Wilkes Wright Field, with a  
Douglas transport loaded with passengers, was delayed two  
days on account of minor repairs. These were made at the  
field and he flew to Washington. Eddie Blanton, in a Fokker  
Detroiter, landed here the evening of April 18, where he met  
William P. MacCready, Jr., Assistant Secretary of Commerce  
for Aeronautics, and they flew to Washington.

The Smolow owned by Clifford Bell, six mail contractor,  
has been reconstructed and is to be used as the service plane  
on the mail route. D. Ray Post, the field engineer, gradu-  
ated from the Franklin school to the aeronautics. He succeeded  
in making it drive there in one afternoon, but was unable to  
embark. Harold Chasman is having his house converted



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and circulars describing and illustrating  
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**INSTANT FOR SALE:** Brand new OX300 Guller motor, in perfect condition, just in shipped to customers, good, also Portland Guller Company, 51 Cross St., Portland, Maine.

**WANTED:** Pattern by pilot experienced as Jockey and Staphole. Must also have experience in student training and commercial work. Can furnish best of references. Frank Galtier, 504 East 8th St., Minneapolis, Minn.

**FOR SALE:** Jersey three place semi-cabinized. Ship and motor all cheap \$1000, terms of desired. Will trade for almost car. E. Winger, 1015 Centre St., Long Island City.

**FOR SALE:** Four passenger Hispano-Steadfast. Newly covered. Excellent passenger carrying plane. \$2000. E. Bush, 204 No. 2nd, Minneapolis, Minn.

**Slightly cracked weather-vane OX3** Jumper for sale or trade \$200 will sell at \$2000 wouldn't but it. Will take \$100 cash. H. L. Morris, Jr., Kaden, La.

**FOR SALE:** Described Hiss motor 100 horsepower. Run 30 hours extra. \$200. John J. Nelson, Aero Garage, New Britain, Conn.

**Closing out all Liberty and Blum parts.** Everything must go. Write or wire your order—3 sets new Liberty, heavy even \$20 per set. Aircraft Engine Works, 20 East Jackson St., Chicago, Ill.

**FOR SALE:** Three-place Curtiss K-6 Tamed. All need less than 20 hours, electric starter, well drawn gearcases for change battery, motor surface auxiliary gas tanks, Withham steel, GE engine, all speed indicator, two altimeters and much number of other instruments and harness \$1000 cash. W. P. Moody, Little Rock, Ark.

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**Young man, 21, airplane engineering student,** desires connection with established business owners or operator for factory or field work with chance for flying instruction. Some experience. Free to go anywhere. Address Box 555, Arlington.

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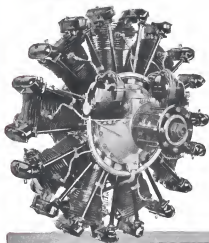
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